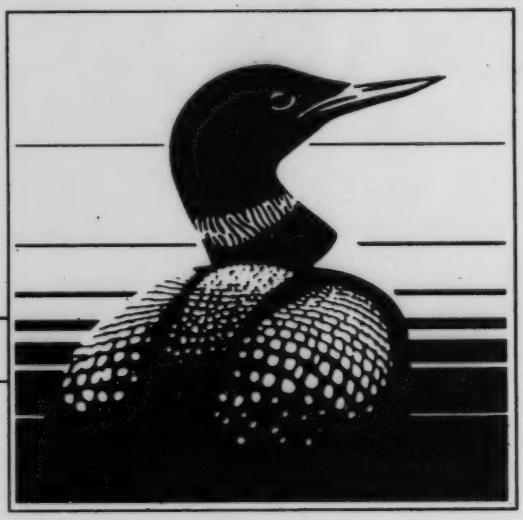
Bird use of the Fanny Bay - Little Bay wetlands, Vancouver Island British Columbia 1990 - 1991

Neil K. Dawe
Ron Buechert
Tony Barnard
Chris Cook

Pacific and Yukon Region 1995
Canadian Wildlife Service
Environmental Conservation Branch



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BIRD USE OF THE FANNY BAY - LITTLE BAY WETLANDS VANCOUVER ISLAND, BRITISH COLUMBIA 1990-1991

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Abstract

Fanny Bay and Little Bay are predominantly intertidal and estuarine habitats. Both bays are situated on Baynes Sound which is internationally recognized as important for migratory waterfowl. To determine the abundance and distribution of migratory and resident birds in and near the Fanny Bay - Little Bay wetlands, weekly surveys were conducted from September 10 1990 to August 25 1991.

The number of bird species recorded using the study site was 123. This number includes 55 species of passerines, 23 species of waterfowl, 9 species of raptors, 6 species of shorebirds and 6 species of gulls.

The wetland areas supported a minimum of 4099 birds in at least one stage of their life history during the study period. The intertidal flats had the most bird use (50%; n=27001) followed by the intertidal marshes (30%).

Spring 1991 bird use was dominated by waterfowl; shorebirds and passerines shared a distant second ranking. Summer 1991 had the lowest bird use of the wetlands study area. Passerines were the primary user group followed closely by waterfowl; shorebirds and gulls roughly shared third place. In autumn 1990, waterfowl were the highest user group with passerines ranking second; shorebirds and gulls were third in abundance. More birds used the area in the winter of 1990-91 than in any other season during the year of study. Waterfowl (mostly diving ducks) used the area in the largest numbers, passerines ranked a distant second followed by shorebirds and gulls.

An annotated species list discusses arrival and departure dates, highest number seen in one day, habitat use and other details for each of the species.

Concluding comments note human impacts particularly from direct disturbance of the birds using the wetlands and discuss possibilities for minimizing this disturbance. Suggestions are also made for further study of the avifauna that would complete the picture of bird use of the Fanny Bay - Little Bay wetlands.

Résumé

La baie Fanny et la baie Little, habitats essentiellement intertidaux et estuariens, s'ouvrent dans la baie de Baynes, région dont l'importance pour les oiseaux aquatiques migrateurs est reconnue à l'échelle internationale. Afin de déterminer l'abondance et la répartition des oiseaux migrateurs et résidents dans les terres humides des baies Fanny et Little et dans leur voisinage immédiat, des inventaires hebdomadaires ont été effectués du 10 septembre 1990 au 25 août 1991.

Au total, 123 espèces d'oiseaux ont été répertoriées dans la zone d'étude : 55 espèces de passereaux, 23 espèces d'oiseaux aquatiques, 9 espèces de rapaces, 6 espèces d'oiseaux de rivage et 6 espèces de goélands.

Au cours de la période d'étude, au moins 4 099 oiseaux ont utilisé les terres humides durant au moins une étape de leur vie. Les estrans ont été les milieux les plus fréquentés (50 %; n=27 001), suivis par les marais intertidaux (30 %).

Au cours du printemps 1991, les oiseaux aquatiques ont été les principaux utilisateurs de ces milieux; suivaient loin derrière, à égalité, les oiseaux de rivage et les passereaux. La plus faible utilisation de la zone d'étude a été enregistrée au cours de l'été 1991. Durant cette période, ce sont les passereaux qui ont dominé, suivis de près par les oiseaux aquatiques et enfin, par les oiseaux de rivage et les goélands. À l'automne 1990, les principaux utilisateurs ont été les oiseaux aquatiques, suivis par les passereaux et, finalement, par les oiseaux de rivage et les goélands. Un plus grand nombre d'oiseaux ont utilisé la zone d'étude durant l'hiver 1990-1991 qu'au cours de n'importe quelle autre saison de l'année d'étude. Les oiseaux aquatiques (en majorité des canards plongeurs) ont dominé; suivaient, loin derrière, les passereaux et enfin, les oiseaux de rivage et les goélands.

Une liste annotée présente pour chacune des espèces répertoriées les dates d'arrivée et de départ, le plus fort total observé en une journée, le type d'habitat fréquenté et d'autres informations utiles.

En conclusion, les répercussions des activités humaines sur les oiseaux utilisant les terres humides, notamment par perturbation directe, sont examinées et des solutions sont proposées. Des recommandations pour d'éventuelles études susceptibles d'étendre nos connaissances sur l'utilisation des terres humides des baies Fanny et Little par l'avifaune sont également présentées.

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Introduction

Estuaries along coastal British Columbia are important to a diverse wildlife, particularly resident and migratory birds (Dawe 1976, 1980, Dawe and Lang 1980, Dawe et al. 1994, Butler and Cannings 1989, Butler et al. 1989, Vermeer et al. 1992). This diverse fauna occurs as a result of two major factors: the variety of habitats that meet on these systems and the productivity of those habitats.

Habitats often associated with typical estuarine ecosystems include marine deep water areas, intertidal sand and gravel flats, cobble beaches, mudflats, spits, river and associated riparian habitats, brackish and saline estuarine marshes with their accompanying dendritic channels, and upland grass, forb, and shrub areas that grade to coastal forests.

This concentration of habitats with its accompanying edges and niches supports a tremendous diversity and abundance of wildlife. For example, inventories from the Little Qualicum River estuary, with an upland area of less than 40 ha, have reported minimums of 14 species of algae, 55 species of fungi, 22 species of bryophytes, 234 species of vascular plants, 29 species of molluscs, 62 orders of arthropods, 15 species of fishes, 4 species of amphibians, 4 species of reptiles, 220 species of birds, and 20 species of mammals (Dawe 1976, 1980, unpublished).

Nutrients and sediments brought down from the watersheds by the rivers are deposited on the deltas providing rich substrates and growing conditions for estuarine marsh plants that, along with marine vegetation such as eelgrass (*Zostera* sp.) and algae, drive the detritus-based estuarine food web. Net primary production of these systems with their attendant marshes and algal beds rival, and in some cases exceed, the production of the tropical rain forests (Ricklefs 1979).

These estuarine ecosystems are important to the survival of both resident and migratory birds. Estuaries act as stepping stones to the millions of birds that migrate along our coast each year providing areas where they can rest and feed during their northern and southern journeys.

In addition, British Columbia's estuaries support Canada's largest wintering populations of waterbirds. Estuaries, in concert with farmlands and freshwater wetlands, form part of a wetlands complex (Eamer 1985) that supports hundreds of thousands of wintering waterbirds. During periods of freezing, however, when farmlands and freshwater marshes are no longer accessible, estuaries become critical habitat to the birds' survival (see Dawe 1980 and Eamer 1985). They are the only ice free areas that have enough food to support the birds over the freezing periods.

In British Columbia, most efforts to document bird-use of estuaries have focused on the larger systems such as the Fraser, Squamish, and Cowichan (Butler and Campbell 1987, Butler and Cannings 1989, Trethewey 1985, Blood et al. 1976); however, the importance of the smaller British Columbia estuaries should not be overlooked (see Butler et al. 1989). Collectively, these smaller systems

contribute significantly to the maintenance of our migratory and resident bird populations.

The Canadian Wildlife Service (CWS) has long recognized the importance of these areas and over the past 15 years has gathered data on the bird use of many of our smaller estuaries. This report documents bird use and numbers on the Cowie Creek estuary and the adjacent intertidal marshes and wetlands of Fanny Bay and Little Bay, British Columbia over the period 10 September 1990 through 25 August 1991.

In addition, data collected by the CWS as well as observations by other naturalists have been included in this report. The results will be of interest to both the wildlife manager and the birdwatching public who want to know more about the avifauna of the Fanny Bay - Little Bay wetlands.

The Study Area

The Fanny Bay - Little Bay wetlands study area ($49^0$30'N, $124^0$48'W) is situated on the east coast of Vancouver Island approximately 24 km southeast of Courtenay, British Columbia (Figure 1). The surficial geology of this low-relief landscape is predominantly glacial (unconsolidated sands, gravels and tills including boulder clay) and glacial marine deposits (silts, clays, sands and gravels) overlain by fluvial and organic deposits (Jungen 1985). Ship Peninsula, which separates Fanny Bay from Little Bay, has a rocky platform shoreline with a beach veneer.

The mean daily temperature at Mud Bay, B.C., 4 km to the south east, ranges from a monthy average of 1.8^0C in January to 17.4^0C in July; the yearly average is 9.3^0C. The area has a mean annual precipitation of 1,714 mm including 113 mm that falls as snow (Environment Canada AES records 1951-1980).

Of the 4 creeks that enter the study area, Cowie Creek is the largest with a mean annual discharge of 1.37 cubic meters per second which includes the water contributed by Cougar-Smith Creek (Braybrook et al. 1995); the estuary of Cowie Creek forms the east side of Fanny Bay. Tweedie Creek enters saltwater at the head of the Bay after passing a freshwater marsh and an intertidal marsh. A tiny watercourse named Cushing Creek crosses a forested portion of the study area and then presumably flows out across the intertidal flats of Fanny Bay. Bob's Creek empties into the intertidal marsh at Little Bay, a part of the study area 0.75 km to the southeast of Fanny Bay. The study area is likely affected by the numerous other estuaries on Baynes Sound including the Tsable River (mean annual discharge 7.8 cubic meters per sec) just 1.2 km northwest of the study area.

Fanny Bay is in the Coastal Douglas Fir Biogeoclimatic Zone where it grades into the Coastal Western Hemlock zone. The dominant species on wet ground are Western Red Cedar, Red Alder, Skunk Cabbage and Slough Sedge. For a more detailed description of the vegetation in the study area, see Table 1.

The lower 5 kilometers of Cowie Creek and the nearby Tsable River support anadromous fish including Coho, Pink and Chum Salmon, and Steelhead.

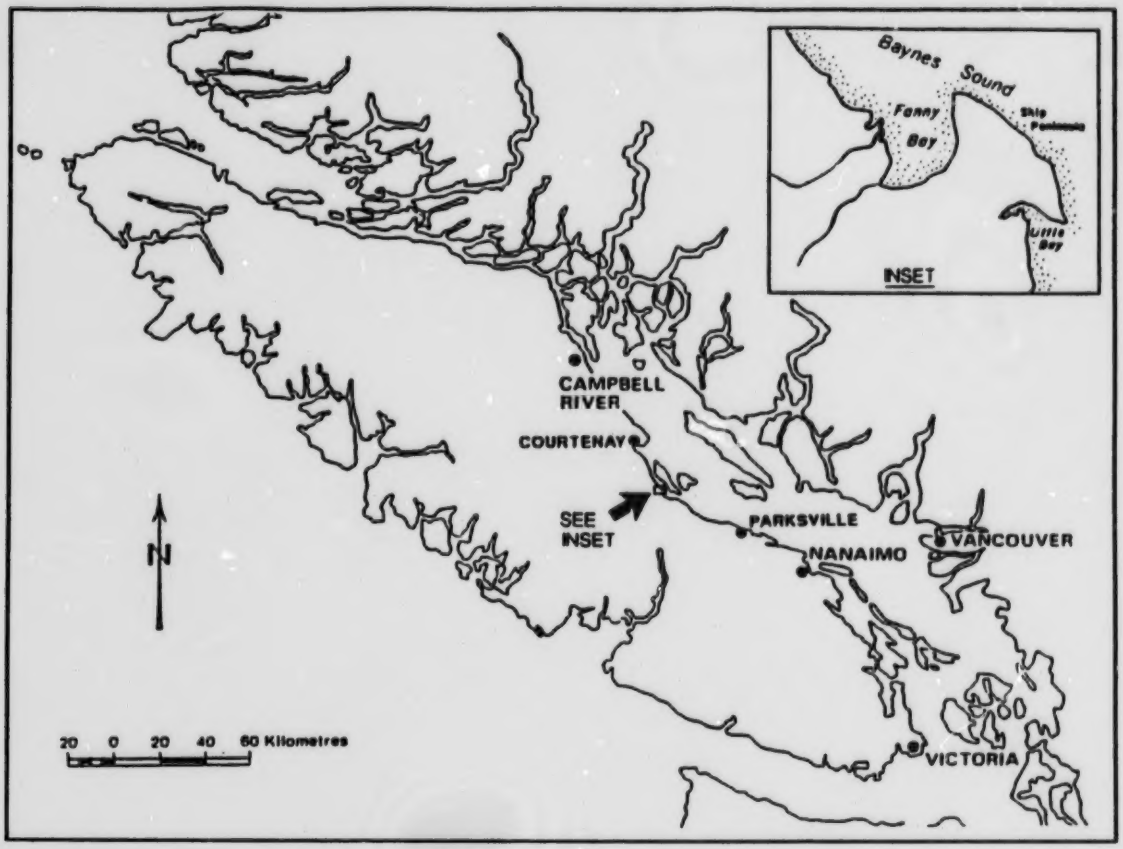
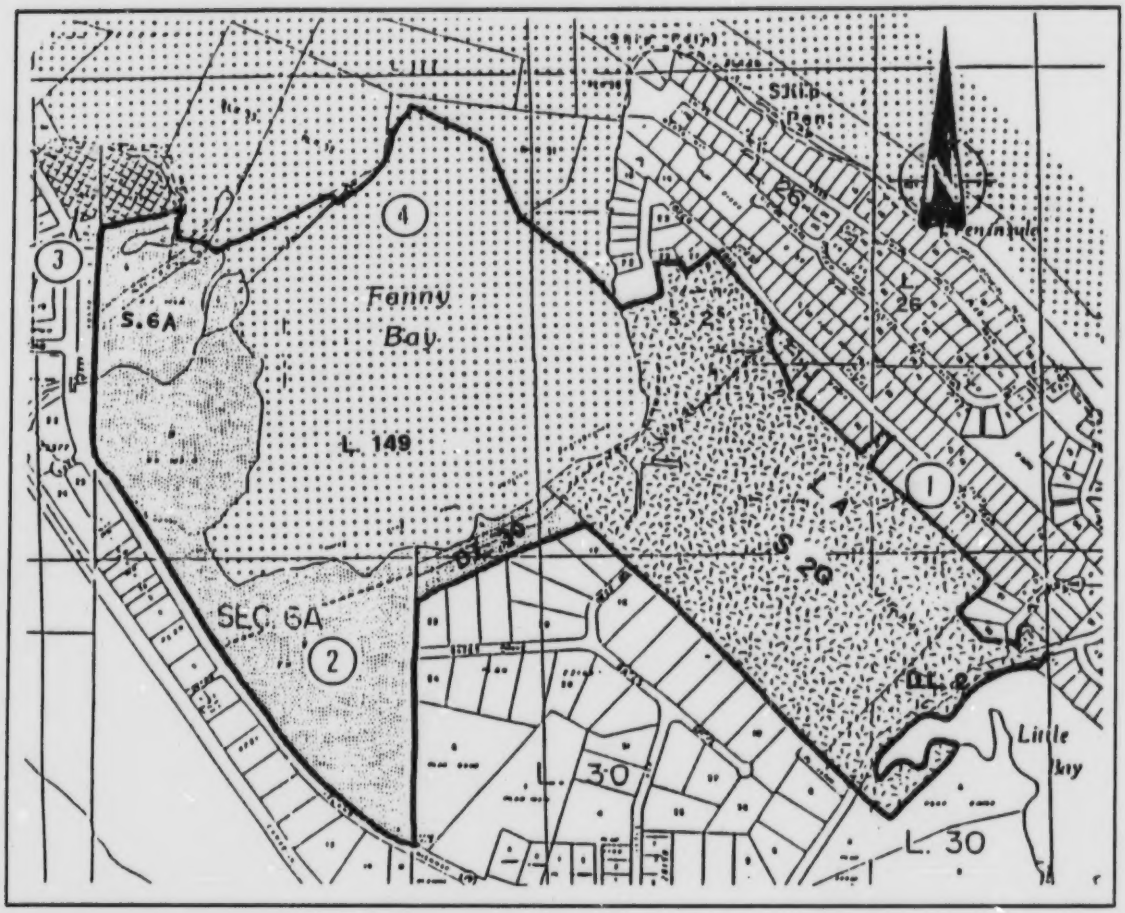


Figure 1. *Location of the Fanny Bay - Little Bay wetlands study area (adapted from Clermont 1992).*

The significance of the Fanny Bay - Little Bay wetlands in terms of its environmental and social values and the potential impacts to those values has been discussed by Clermont (1992): "Since 1973, the (B.C.) Ministry of Environment has actively pursued the protection of foreshore areas within Baynes Sound including Fanny Bay," through a series of management and land tenure decisions. In 1983, the Baynes Sound region was designated by the Federal Government as "critical habitat", important on a North American scale for waterfowl. A series of land aquisitions began in 1987 when the Pacific Estuary Conservation Program (funded by Wildlife Habitat Canada, the Nature Trust of B.C., Ducks Unlimited Canada, the federal Department of Fisheries and Oceans, Canadian Wildlife Service, Crown Lands, B.C., and the B.C. Ministry of Environment) obtained 45 hectares of forest, meadow and shoreline. "The Ministry of Environment, Lands and Parks (B.C.) now leases or retains management authority over most of the Fanny Bay Conservation Unit (Figure 2). The only exceptions are commercial oyster leases ... (which are) viewed as a compatable resource use."



KEY

1. Section 2 G and D.L. 2, Pacific Estuary Conservation Program agencies acquired in 1987.
2. Section 6 A and D.L. 30, former Greenbelt, leased to B.C. Ministry of Environment in 1989, expires 2019.
3. Private lands, presently undeveloped.
4. B.C. Ministry of Environment has a Section 13 transfer request with Crown Lands (B.C.) for part of Lot 149, Reserve # 74040. (If granted maximum tenure is 30 years.)

Figure 2. *Land status of the Fanny Bay Conservation Unit and adjacent lands (from Clermont 1992).*

Methods and Limitations

The study area was divided into 7 units that reflected the major habitat types in order to determine areas of high bird use within the estuary. See Table 1 for a list of the habitat units and their descriptions. Figure 3 shows the location of the habitat units used in the study.

Habitat Unit	Name	Habitat Description
1	Subtidal	Subtidal and deep water marine area beyond entrance to Fanny Bay.
2	Intertidal Flats	Primarily unvegetated intertidal mud and sand flats with some green algae. *Salicornia* grows along the high fringe and *Fucus* in rocky areas.
3	Intertidal Marsh North	Upper intertidal marsh with *Distichlis spicata, Scirpus maritimus, Salicornia Virginica* and *Triglochin maritimum.* Estuarine brackish marsh with *Carex lyngbyei, Scirpus americanus, Agrostis spp.* and *Deschampsia spp.*
4	Freshwater Marsh	Cattail (*Typha latifolia*) marsh adjacent to a sedge marsh, grasslands, woodland swamp of Skunk Cabbage, Red Alder, Cottonwood and *Spirea spp.*
5	Intertidal Marsh East	A wet grassy meadow in transition (since 1988) to a brackish intertidal marsh community that includes a sedge marsh with *Carex obnupta, Eleocharis palustris* and *Scirpus maritimum.*
6	Intertidal Marsh South	Estuarine marsh habitat made brackish by springs feeding into Little Bay.
7	Forest	Second growth forest with stands of Red Alder, Cottonwood, Douglas Fir, Western Red Cedar and Big-leaf Maple; Salmonberry, Sword Fern and Skunk Cabbage dominate the understorey. The unit also includes grassland, creek and woodland swamp habitats.

Table 1. *Habitat Units covered during the Fanny Bay - Little Bay wetlands bird survey, 10 September 1990 through 25 August 1991 (see also Figure 3).*

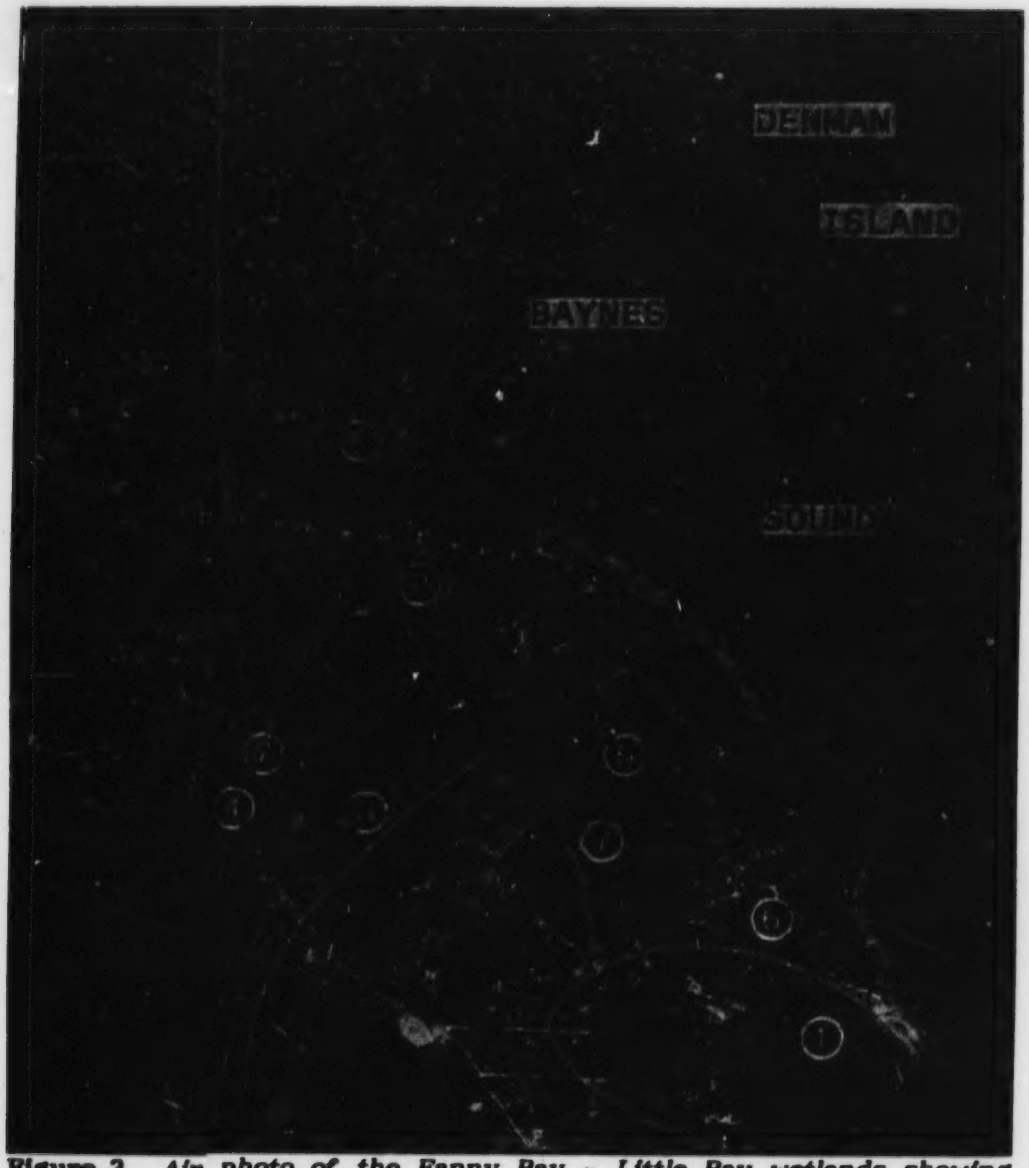


Figure 3 *Air photo of the Fanny Bay - Little Bay wetlands showing habitat units (by number) and suggested observation stations (solid black circles) used during the surveys.*

Survey participants covered the study area on foot, and using binoculars and telescopes, counted and recorded all birds observed primarily from suggested viewing locations. In addition, the larger bird concentrations were marked directly on a copy of an air photo of the study area to determine the areas of highest bird use within each habitat type.

Weekly surveys were conducted from 10 September 1990 through 25 August 1991. Chris Cook acted as the survey leader, initially under the direction of Tony Barnard and later the senior author. For a list of participants and survey dates see Appendix I).

The numbers of birds recorded are considered to be generally accurate for the areas surveyed but are undoubtedly conservative due to inherent limitations (see Dawe 1982). Poor visibility due to weather, and birds underwater or shielded by vegetation during the period of observation would lead to an underestimation of the numbers of birds recorded. The data are based on observations at a particular point in time and do not necessarily reflect the total bird use of the area under observation. For example, birds dependent on the estuary only for a few days during spring and autumn migration could be missed altogether if observation periods occurred on either side of their arrival and departure. Also, data were not collected at night; however, low tides on the study area during the winter months occur mostly during the night. Thus, in winter, observations were not made when the intertidal areas and algal beds were exposed, i.e. at times when they would likely be used by birds such as dabbling ducks.

Survey data were summarized using BASIC programs written by Allan Keller, CWS, and modified for seasonal summaries and statistics by the senior author (see Appendices III and IV). The summarized data were analysed and much of the first draft of the report written by Ron Buechert under contract to the Mid Island Wildlife Watch Society. His contribution was reviewed and edited by the senior author.

Results and Discussion

Bird Use of the Wetland Area

Over the study period, 123 species of birds were identified in the Fanny Bay wetlands study area. In addition, 17 species from other sources were included in the checklist for the area (see Appendix II). A total of 27,001 birds was recorded over the study period.

To estimate the minimum number of birds dependent on the Fanny Bay wetlands, the maximum single day bird numbers for each species were summed (Table 2). A minimum of 4099 birds depended on the Fanny Bay wetlands for some aspect of their life history.

Species	Number	Season	Species	Number	Season	Species	Number	Season
PALO	6	Win 90	RNPH	1	Sum 91	NOWR	1	Aut 90
COLO	11	Aut 90	RUGR	1	Aut 90	WIWR	5	Aut 91
PBGR	3	Aut 90	KILL	10	Spr 91	MAWR	2	Spr 91
HOGR	6	Aut 90	GRYE	4	Win 90	AMDI	3	Aut 90
RNGR	3	Spr 91	WESA	300	Spr 91	GCKI	20	Aut 90
WEGR	60	Win 90	PESA	5	Aut 90	RCKI	9	Spr 91
DCCO	17	Aut 90	DUNL	220	Win 90	SWTH	8	Sum 91
BRCO	1	Spr 91	DOWI	6	Aut 90	AMRO	25	Spr 91
PECO	15	Spr 91	SHOR	700	Spr 91	VATH	4	Spr 91
GSNE	10	Sum 91	BOGU	87	Aut 90	BOWA	1	Spr 91
TRUS	22	Win 90	MEGU	56	Spr 91	CEWA	60	Aut 90
CAGO	39	Spr 91	RBGU	2	Aut 91	NOSH	1	Aut 90
WODU	7	Aut 90	GWGU	6	Spr 91	EUST	80	Sum 91
GWTE	210	Aut 91	CATE	1	Sum 91	SOVI	1	Aut 90
MALL	151	Win 90	COTE	30	Aut 90	HUVI	1	Aut 90
NOPI	17	Spr 91	PIGU	2	Sum 91	WAVI	2	Sum 91
BWTE	3	Spr 91	MAMU	2	Spr 91	REVI	2	Sum 91
NOSL	4	Aut 90	RODO	12	Win 90	OCWA	8	Spr 91
GADW	3	Aut 90	BTPI	4	Sum 91	YEWA	3	Sum 91
EUWI	2	Win 90	SEOW	1	Aut 90	YRWA	1	Aut 90
AMWI	374	Spr 91	HUMM	5	Spr 91	BTGR	5	Spr 91
SCAU	550	Win 90	BEKI	6	Aut 91	TOWA	2	Spr 91
HADU	10	Aut 90	RBSA	2	Win 90	MGWA	1	Sum 91
OLDS	7	Win 90	DOWO	1	Aut 90	COYE	2	Spr 91
SCOT	330	Spr 91	HAWO	1	Aut 90	WIWA	1	Spr 91
COGO	32	Spr 91	NOFL	9	Aut 90	RSTO	10	Aut 90
BAGO	13	Win 90	PIWO	1	Aut 90	SAVS	37	Aut 90
BUFF	102	Spr 91	WIFL	2	Sum 91	FOSP	4	Spr 91
HOME	4	Aut 90	HAFL	1	Sum 91	SOSP	15	Aut 91
COME	13	Aut 90	PSFL	2	Sum 91	GCSP	8	Aut 90
RBME	3	Spr 91	TRSW	1	Sum 91	WCSP	1	Aut 90
TUVU	2	Aut 90	VGSW	8	Spr 91	DEJU	40	Aut 90
OSPR	2	Spr 91	BASW	13	Sum 91	RWBL	21	Win 90
HAWK	1	Aut 90	STJA	10	Aut 90	BRBL	2	Spr 91
BAEA	6	Win 90	NOCR	58	Sum 91	BHCO	3	Sum 91
NOHA	1	Aut 90	CORA	4	Sum 91	PUFI	7	Spr 91
SSHA	4	Aut 90	CBCH	8	Aut 90	HOFI	11	Aut 90
COHA	1	Sum 91	BUSH	18	Aut 90	RECR	8	Aut 90
RTHA	1	Aut 90	RBNU	4	Aut 90	PISI	11	Spr 91
AMKE	1	Spr 91	BRCR	1	Sum 91	AMGO	12	Aut 90
MERL	1	Aut 90	BEWR	2	Spr 91	EVGR	4	Spr 91
						Total	4099	

Table 2. *Estimated minimum numbers of birds dependant on the Fanny Bay - Little Bay wetlands September 1990 through August 1991, based on the maximum number of each species observed on migratory bird surveys. For species names, see Appendix II.*

Habitat Use

Of the 7 habitat units defined (Table 1 and Figure 3), the intertidal flats received the highest bird use (50%) followed by the intertidal marsh north (17%) the intertidal marsh east (13%), subtidal habitat (8%), forest (6%) and intertidal marsh south (4%). The freshwater marsh, although important to some species, ranked lowest in habitat use overall (1%).

Seasonal Numbers

Spring: Figure 4 shows the proportion of species group use on the wetlands in the spring of 1991. Waterfowl were the reported in the largest numbers followed by shorebirds and passerines. The seasonal total was 7681 birds.

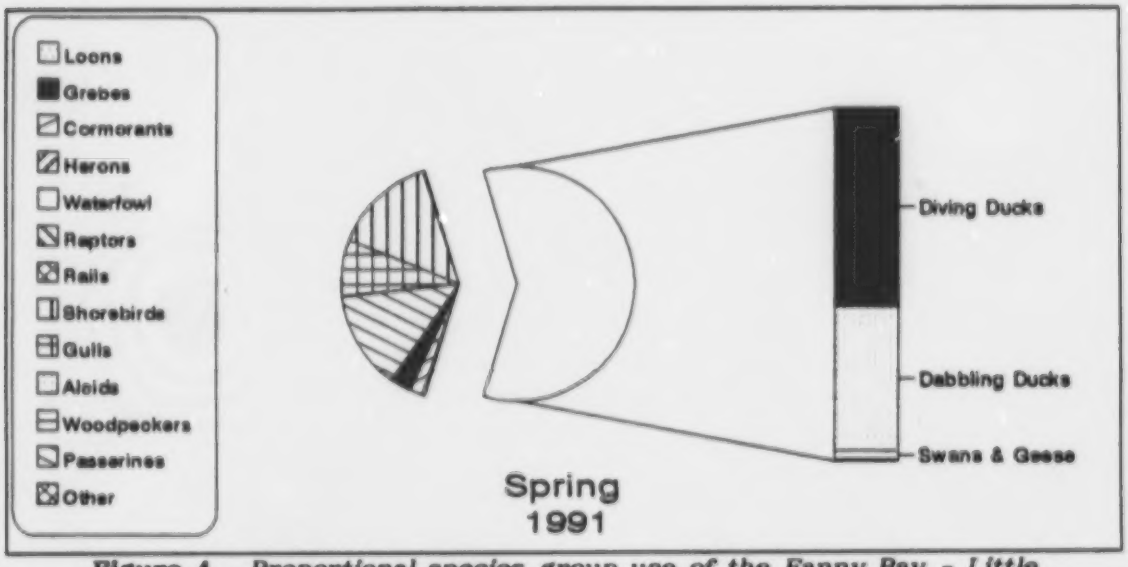


Figure 4. *Proportional species group use of the Fanny Bay - Little Bay wetlands study area, spring 1991.*

Summer: Figure 5 shows the proportion of species group use on the wetlands in the summer of 1991. Passerines were the most prominent group followed closely by waterfowl and then shorebirds and gulls. Summer had the lowest seasonal total with 2001 birds.

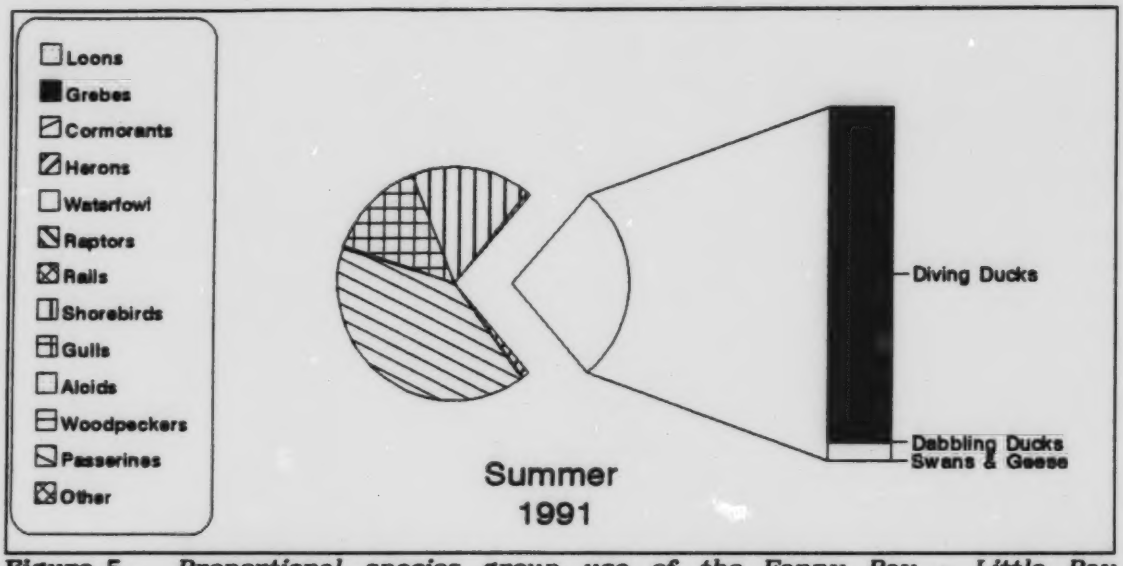


Figure 5. *Proportional species group use of the Fanny Bay - Little Bay wetlands, summer 1991.*

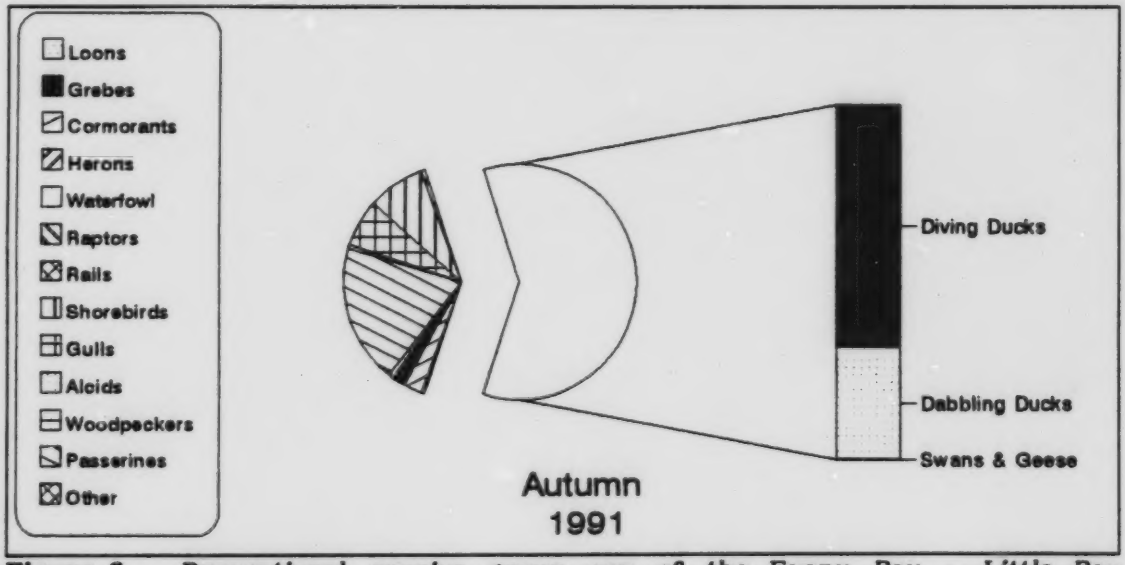


Figure 6. *Proportional species group use of the Fanny Bay - Little Bay wetlands, autumn 1990.*

Autumn: Figure 6 shows the proportion of species group use on the wetlands in the autumn of 1990. Waterfowl were the highest user group with passerines ranking second; shorebirds and gulls roughly shared third place. The seasonal total was 6207 birds.

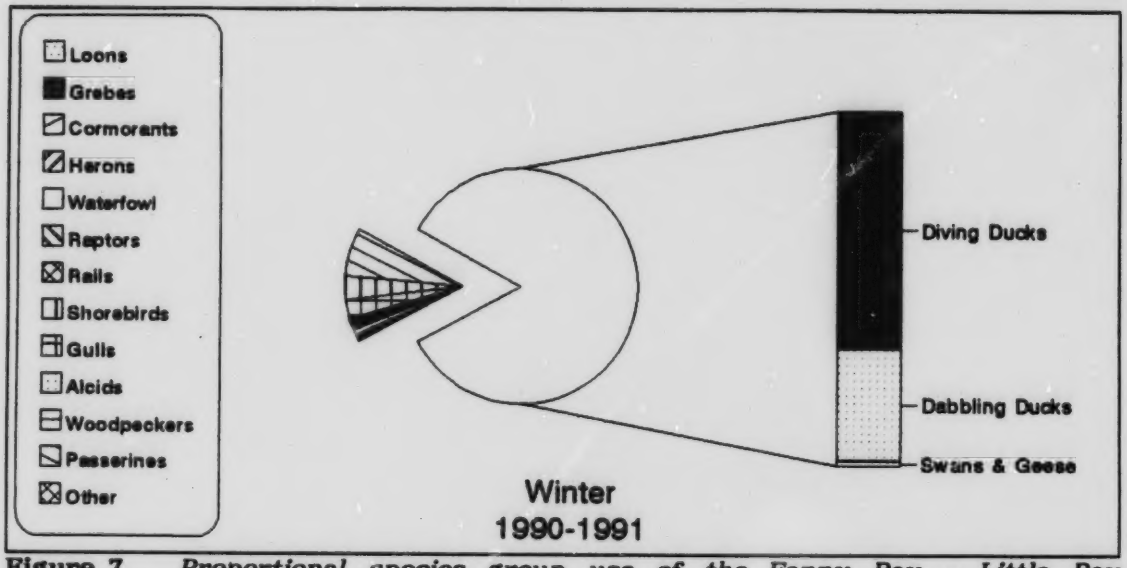


Figure 7. *Proportional species group use of the Fanny Bay - Little Bay wetlands, winter 1990-1991.*

Winter: Figure 7 shows the proportion of species group use on the wetlands in the winter of 1990-1991. Waterfowl (mostly diving ducks) were the dominant group followed by passerines, shorebirds, and gulls. The seasonal total for winter was the highest for the survey at 11,112 birds.

Species Composition

The following annotated species list includes summarized data from the survey period. Species groups are presented in taxonomic sequence. Within each group or subgroup, species are discussed in decreasing order of highest use of the wetlands during the survey.

Loons: Two species of loons were recorded over the study period: the Common Loon and Pacific Loon. A combined total of 91 birds were observed (<1% of all birds) 8% of which were noted only as loon species.

Common Loon numbers totalled 76 birds over the study period (84% of all loons). The earliest arrival date was 25 August 1991 and the latest departure date was 5 May 1991. Although this species was seen at least once in every season, most were recorded in autumn (54%) and spring (29%). A peak of 11 Common

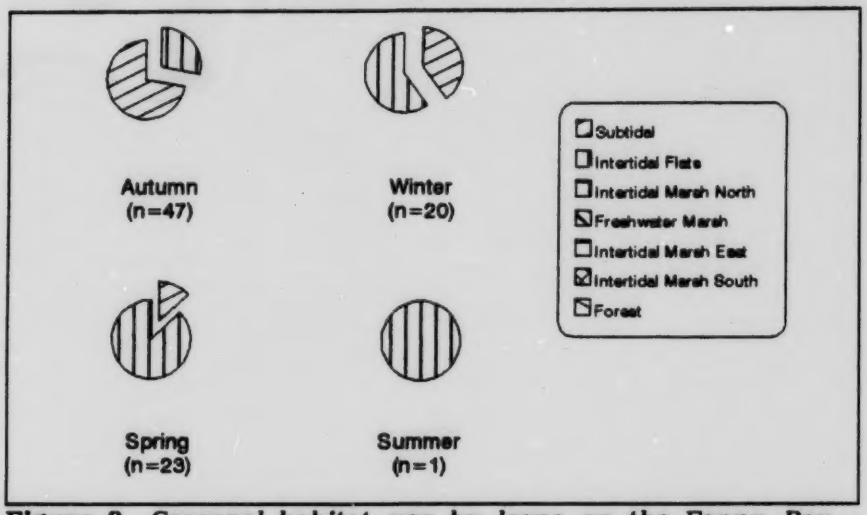


Figure 8. *Seasonal habitat use by loons on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

Loons was seen on 8 October 1990 when no other loon species were noted. In autumn, most of the Common Loon use was in the subtidal area but that use shifted to the intertidal flats in winter and spring (Figure 8).

A total of 7 Pacific Loons was seen. Six were observed on 20 January 1991 using the subtidal habitat and 1 bird was seen on the 7 April 1991 in the intertidal flats habitat unit.

Grebes: Four species of grebes were recorded: Western, Horned, Red-necked and Pied-billed; their combined total was 510 birds (2% of all birds).

The Western Grebe was the most abundant of the grebes with a total of 428 birds seen (84% of all grebes). The earliest arrival was 17 September 1990 and the latest departure was 12 May 1991. Over that period, the species was seen intermittently (frequency of occurrence = 49%), usually in groups of 20 or more. Seasonal fluctuations in their numbers are shown in Figure 9. Almost all of the Western Grebes (98%) were observed using a distinct area within the subtidal habitat unit (Figure 10).

A total of 73 Horned Grebes was seen over the study period (15% of all grebes). From the earliest arrival on 17 September 1990 to the latest departure on 29 April 1991, the Horned Grebe had a frequency of occurrence of 64%. Seasonal fluctuations in Horned Grebe numbers are shown in Figure 9. The Horned Grebe used the Fanny Bay wetlands in smaller numbers but with more consistency than the Western Grebe. It preferred the intertidal flats in autumn and spring; in winter the subtidal habitat was used the most (Figure 11).

We saw a total of 6 Red-necked Grebes over the study period. During autumn 1990, 1 bird was reported on 10 September and another on

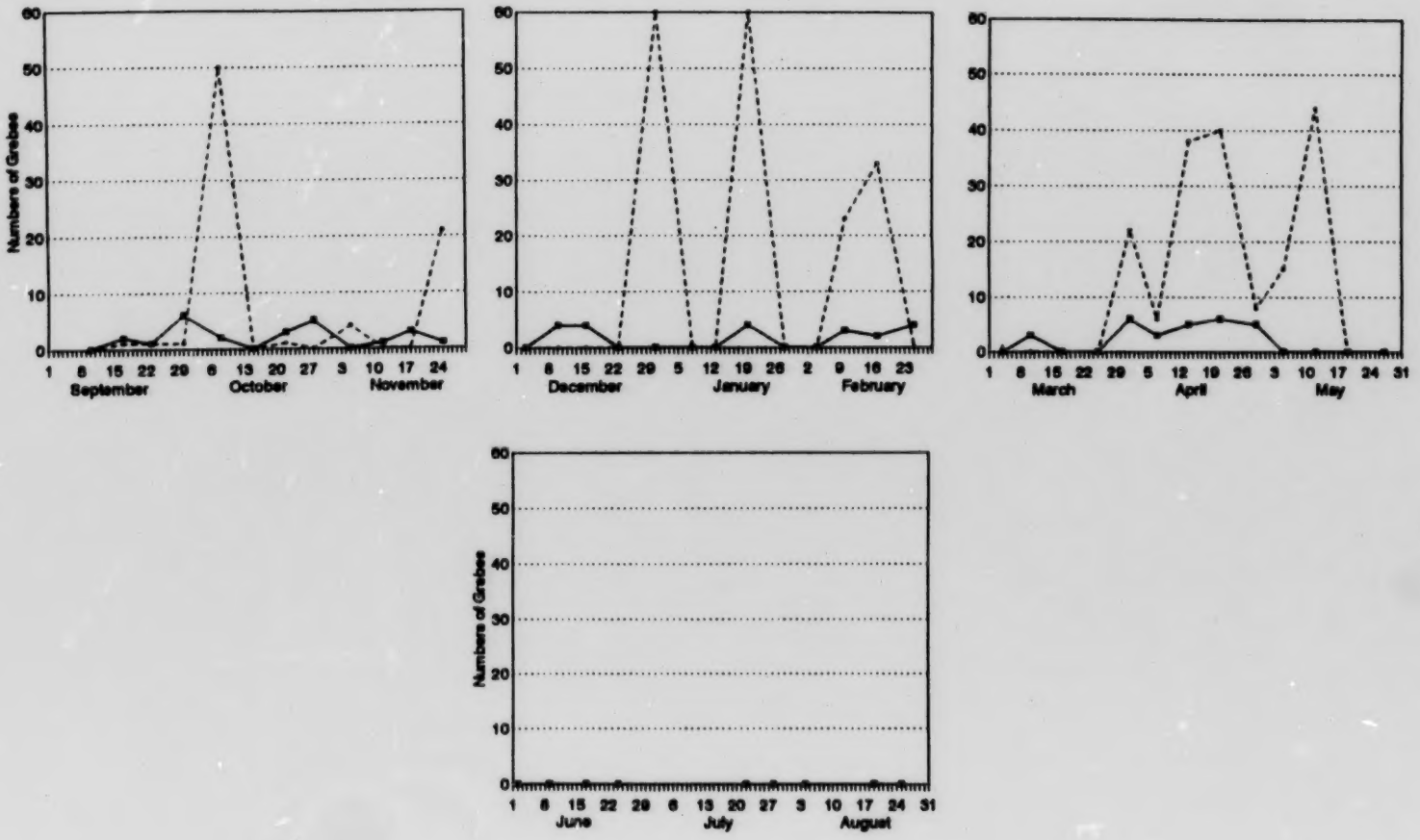


Figure 9. *Seasonal fluctuations in numbers of Horned Grebes (solid line) and Western Grebes (dashed line) on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

28 October, both in the subtidal habitat; during spring 1991, 1 bird was reported on 7 April and a peak of 3 were seen on 21 April, all in the intertidal flats.

Three Pied-billed Grebes were recorded using the intertidal flats habitat on 28 October 1990.

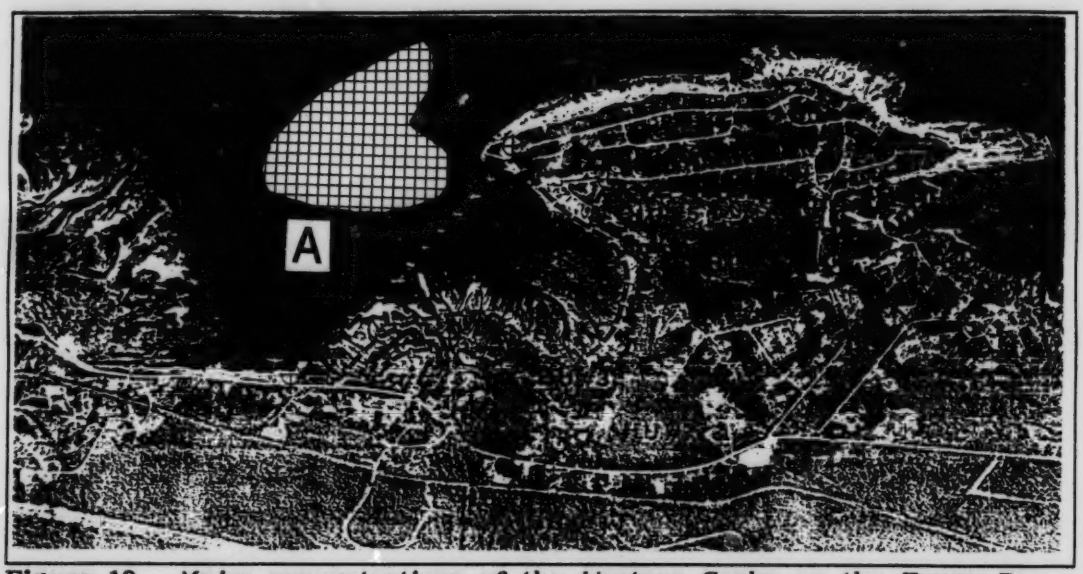


Figure 10. *Major concentrations of the Western Grebe on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991, shown as a proportion of total Western Grebes seen. A-98%.*

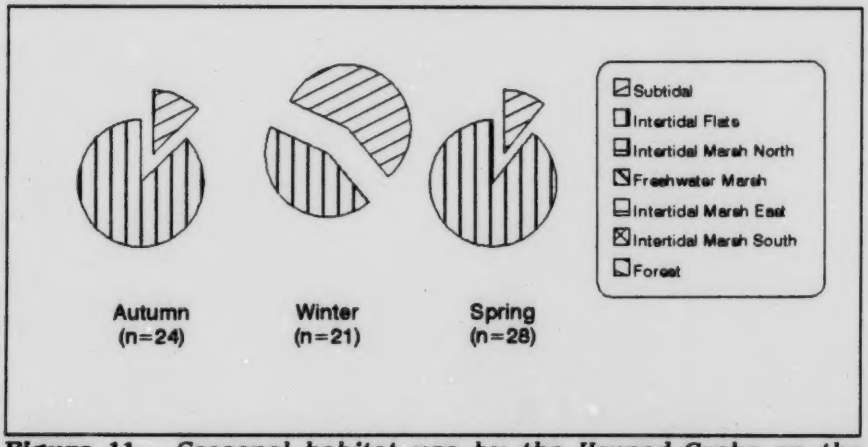


Figure 11. *Seasonal habitat use by the Horned Grebe on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

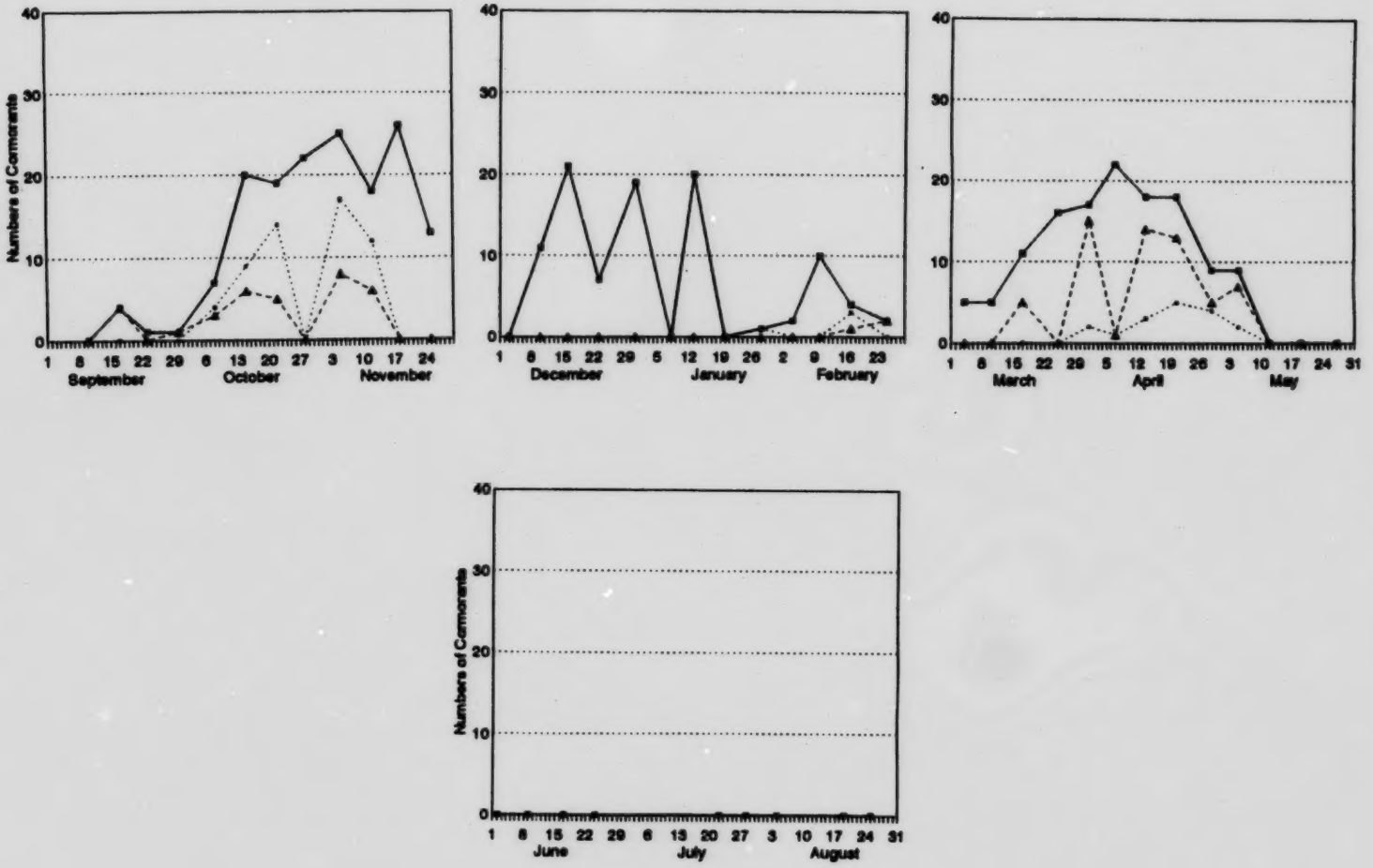


Figure 12. *Seasonal fluctuations in numbers of Double-crested Cormorants (dotted line), Pelagic Cormorants (dashed line) and all cormorants combined (solid line) on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

Cormorants: Three species of cormorants were recorded with a combined total of 383 birds (1% of all birds). The Pelagic Cormorant and the Double-crested Cormorant were identified in equivalent numbers overall, however their relative abundance varied with the season (Figure 12). The actual proportions of each species are uncertain because 54% of all cormorants were reported simply as cormorant species. Most cormorants were seen in autumn (41%) and spring (34%). Cormorants were usually observed resting or preening on a raft anchored at the outer edge of the intertidal flats habitat unit (94%) or using the subtidal area.

Of the cormorants identified, the Pelagic was the most abundant with a total of 96 observed (25% of all cormorants). The earliest arrival was on 17 September 1990 and the latest departure was on 5 May 1991. For seasonal fluctuations in Pelagic Cormorant numbers see Figure 12. Most of the birds (63%) were seen in spring with a peak of 15 recorded on 1 April 1991. Their preferred habitat was the intertidal flats.

The total number of Double-crested Cormorants ranked a close second at 77 birds (20% of all cormorants). Earliest arrival was on 8 October 1990 and latest departure was on 5 May 1991. The Double-crested Cormorant was seen mostly in autumn (73%) when it became the most abundant of the cormorants identified; its numbers peaked at 17 birds on 5 November 1990 (Figure 12). The intertidal flats was the favoured habitat (95%).

Two Brandt's Cormorants were reported: 1 on 7 April 1991 and 1 on 14 April 1991; both were in the intertidal flats habitat unit.

Herons: The Great Blue Heron was the only species of heron reported over the study period; a total of 106 birds were seen (<1% of all birds). Herons occurred in similar numbers each season. A peak of 10 individuals was recorded on 2 June 1991. The lowest counts were in winter (18% of all herons); a winter peak of 4 birds was reported on 3 separate dates. All 7 habitat units were used by the Great Blue Heron but the intertidal marsh north and the intertidal marsh south accounted for most of the use (Figure 13). A heronry of approximately

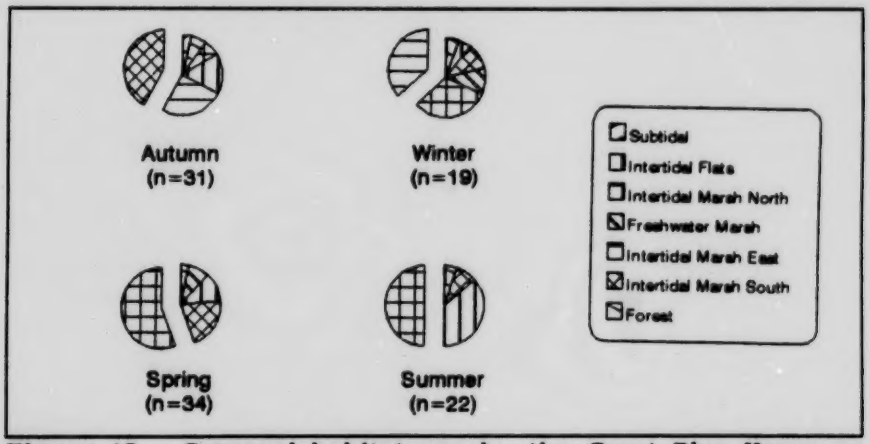


Figure 13. *Seasonal habitat use by the Great Blue Heron on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

16 nests exists in the forest habitat unit. Whether it was active during the study period is unknown.

Swans: A total of 142 Trumpeter Swans was reported during the survey (<1% of all birds). From the earliest arrival on 18 November 1990 to the latest departure on 10 March 1991, the Trumpeter Swan had a frequency of occurrence of 88% on the surveys. However, most of the swans were observed in winter with a peak of 22 birds occurring on 31 December 1990 (Figure 14). Preferred swan habitat varied depending on the season but over the entire year almost all habitat use took place within a small portion of the intertidal marsh north (Figure 15; Figure 16).

Geese: The Canada Goose was the only goose species seen during the survey. Observers tallied 148 birds (<1% of all birds). The Canada Goose was present from the earliest arrival on 4 February 1991 to the latest departure on 22 July 1991 during which time its frequency of occurrence was 68%. Seasonal fluctuations in Canada Goose numbers are shown in Figure 17. Most of the birds were noted in the spring (68%) when a peak number of 39 birds was recorded on 5 May 1991. The species nested in the area; courtship behaviour was observed on 10 February 1991 and goslings were seen on 12 May 1991 and 2 June 1991. Habitat use changed with the seasons: in winter, the intertidal marsh east was the only habitat used by the geese, while in spring the intertidal marsh north was preferred (Figure 18).

Dabbling Ducks: During the study period, 9 species of dabbling ducks were recorded representing a total of 5951 birds (22% of all birds). The most abundant was the American Wigeon followed by the Green-winged Teal and Mallard. The remaining species (together comprising < 3% of dabbling ducks) were: Northern Pintail, Wood Duck, Gadwall, Northern Shoveller, Eurasian Wigeon and Blue-winged Teal. Ten percent of all dabbling ducks observed during the winter and spring were reported simply as dabbling duck species. Thus, the actual proportions could be different from the percentages given for identified birds in those seasons. Fluctuations in dabbling duck numbers are shown in Figure 20. Although arrivals began at the end of summer and continued throughout autumn, most of the dabbling ducks were reported from the winter period (49%). The peak number for autumn (250) was the result of Green-winged Teal arrivals whereas the peak numbers in winter (458) and spring (515) represent mostly American Wigeons. By the end of May, all dabbling ducks had departed. The intertidal marsh east habitat was used most by dabbling ducks during autumn and their use gradually shifted away from that area to the intertidal marsh north (Figure 19).

American Wigeon numbers totalled 2252 birds over the study period (38% of dabbling ducks). The earliest arrival was on 10 September 1990 when we saw 9 individuals in the subtidal habitat. All other sightings occurred from 28 October 1990 to the date of the latest departure on 21 April 1991. Seasonal fluctuations in American Wigeon numbers are shown in Figure 21. The majority of wigeon (58%) were recorded in winter but the peak number of 374 birds was recorded on 10 March 1991. The preferred habitat of the American Wigeon was the intertidal marsh north followed by the intertidal flats; however, in autumn the intertidal marsh south was preferred (Figure 22). Within these habitat units, the larger groups of wigeon were mostly seen using the areas closest to the boundary between the intertidal marsh north unit and the intertidal flats unit (Figure 23).

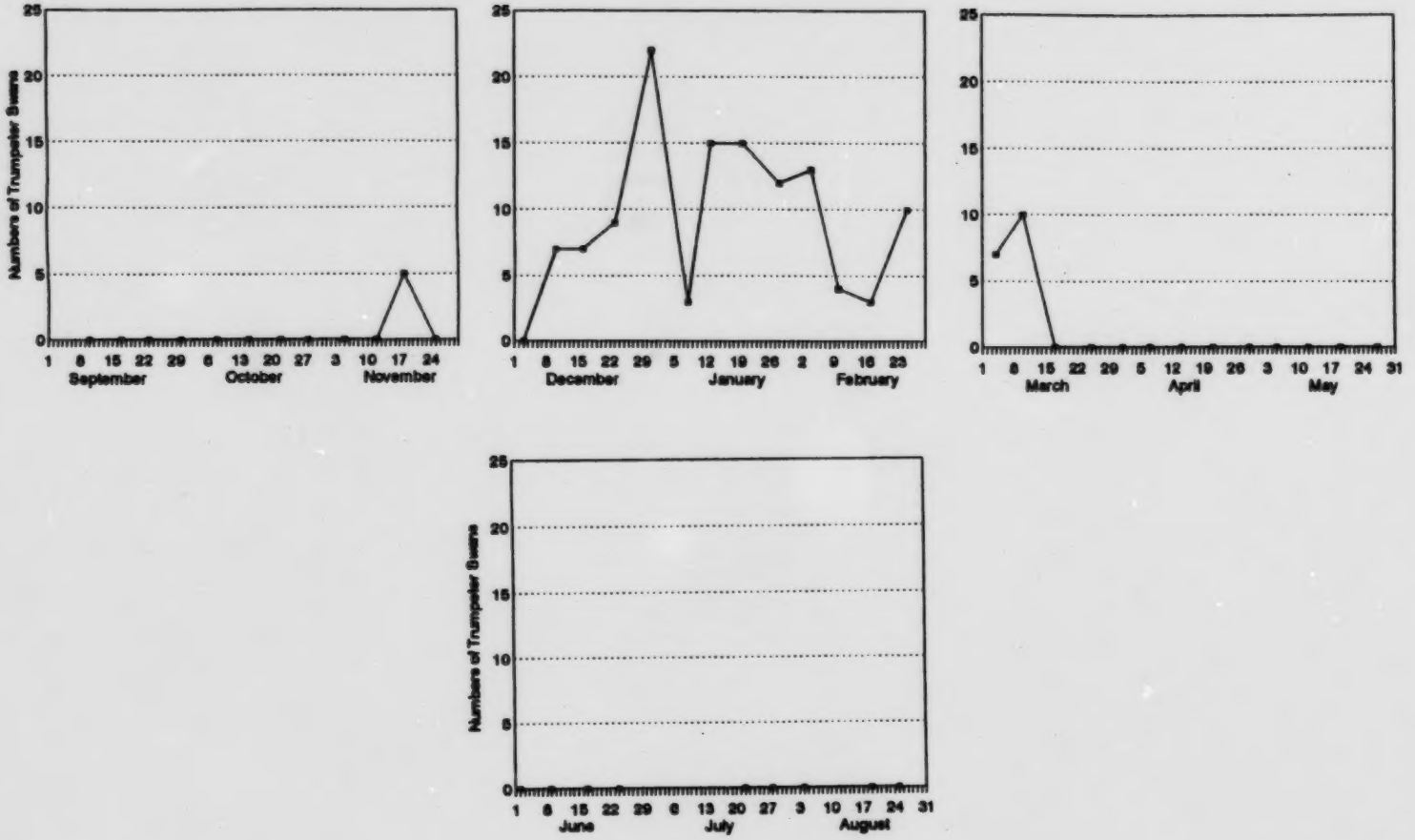


Figure 14. *Seasonal fluctuations in numbers of Trumpeter Swans on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

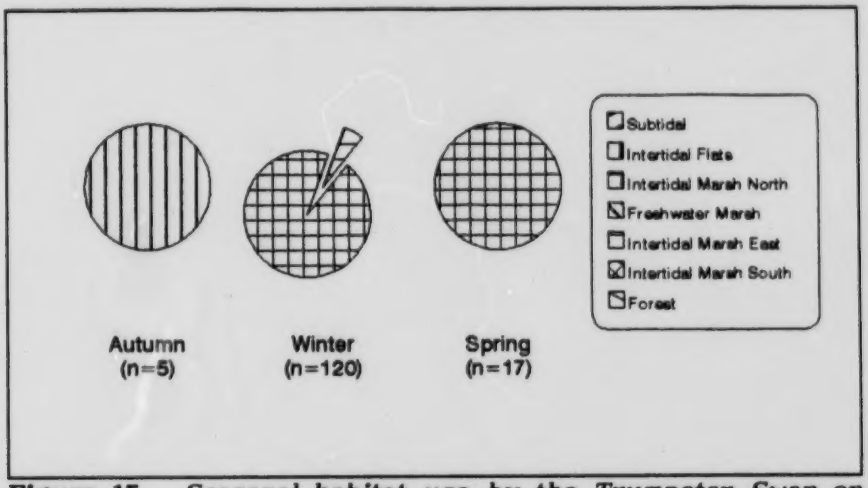


Figure 15. *Seasonal habitat use by the Trumpeter Swan on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

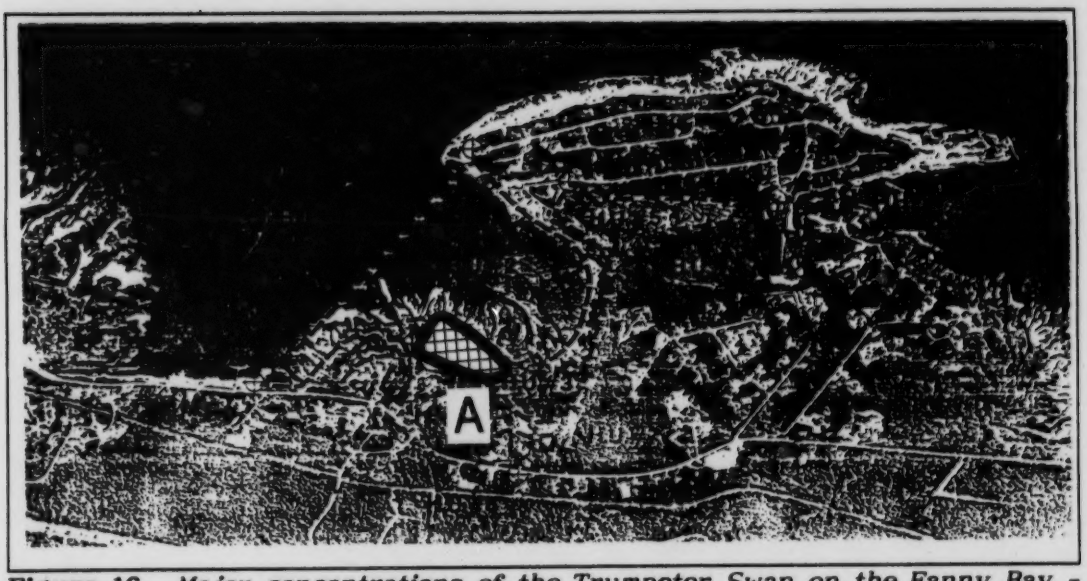


Figure 16. *Major concentrations of the Trumpeter Swan on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991, shown as proportions of total Trumpeter Swans seen. A-80%.*

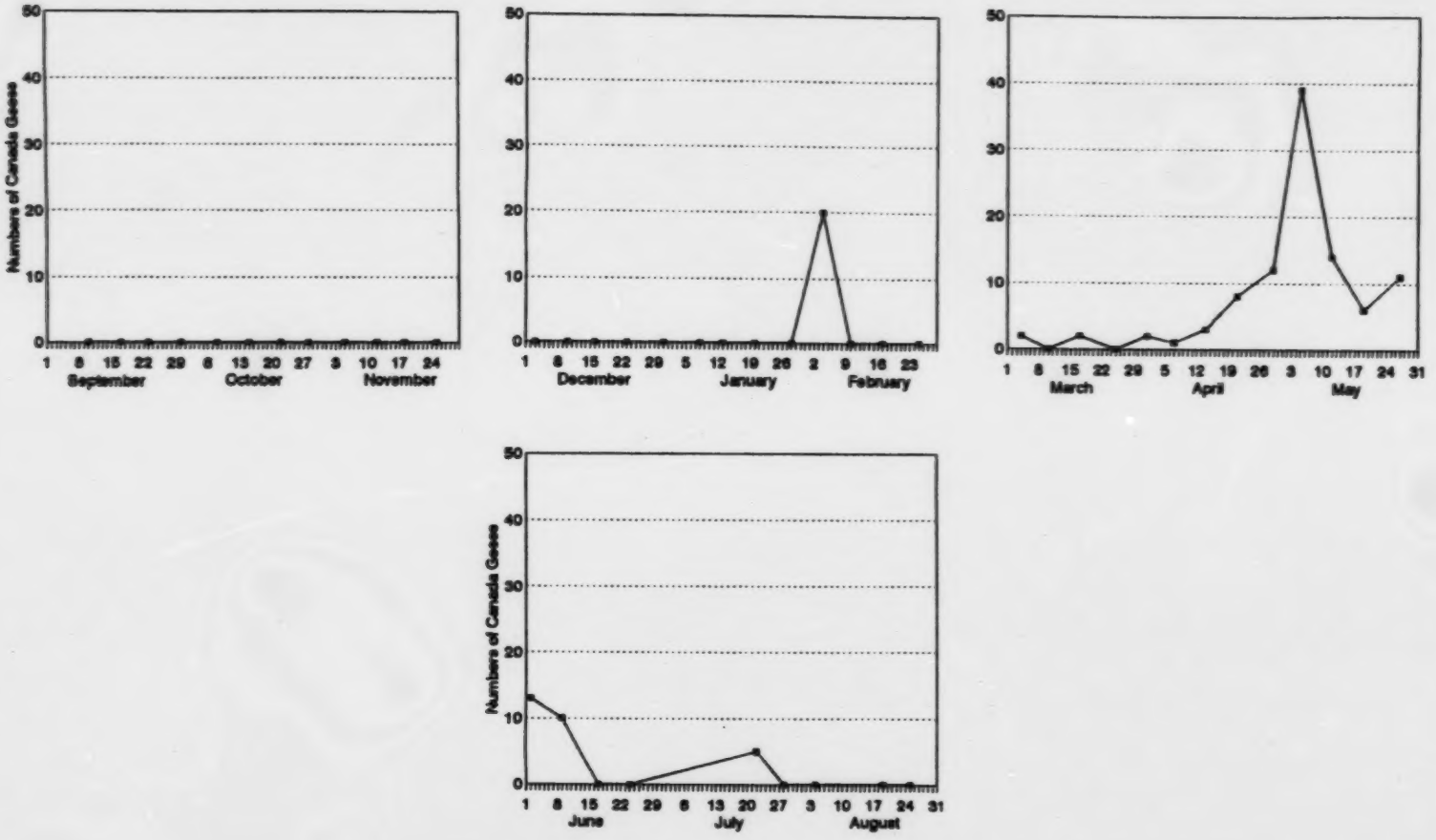


Figure 17. *Seasonal fluctuations in numbers of Canada Geese on the Fanny Bay - Little Bay wetlands, autumn 1990 through summer 1991.*

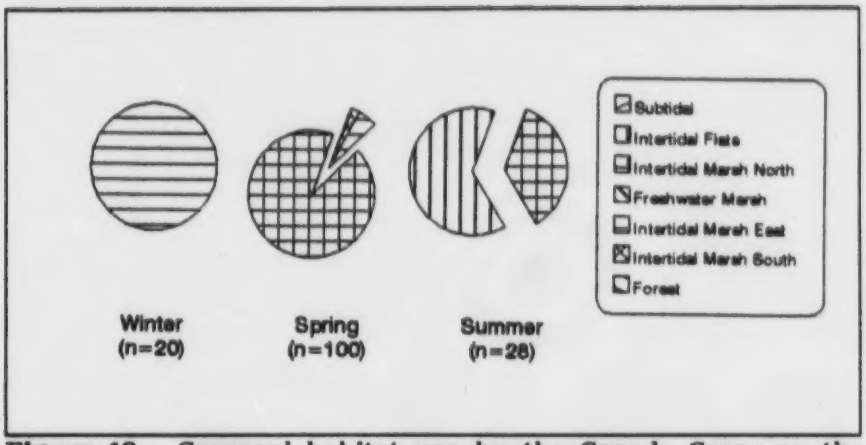


Figure 18. *Seasonal habitat use by the Canada Goose on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

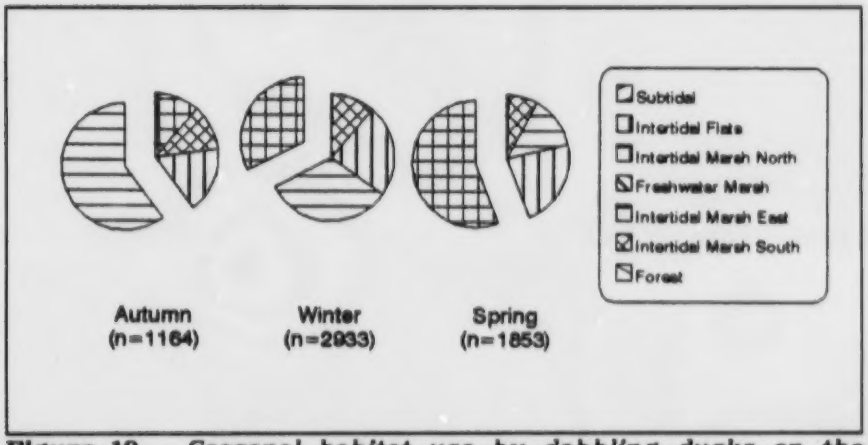


Figure 19. *Seasonal habitat use by dabbling ducks on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

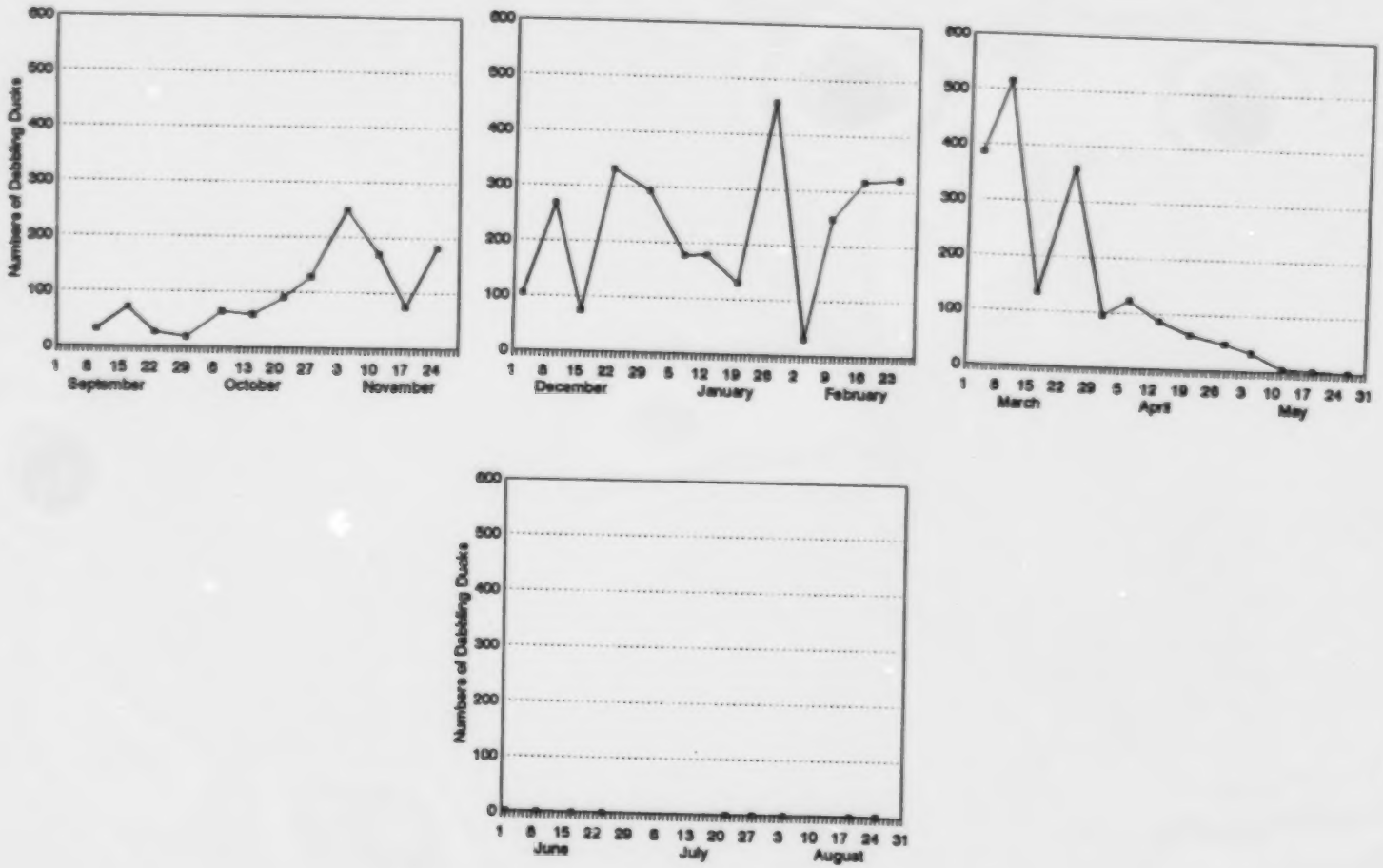


Figure 20. *Seasonal fluctuations in the numbers of dabbling ducks on the Fanny Bay - Little Bay wetlands, autumn 1990 through summer 1991.*

The Green-winged Teal was the second most abundant dabbling duck with a total of 1630 birds (27% of dabbling ducks). The earliest arrival was 10 September 1990 and the latest departure was 5 May 1991, with a frequency of occurrence of 91% over that period. Peak numbers of 210 Green-winged Teal were recorded on 5 November 1990. Seasonal fluctuations in Green-winged Teal numbers are shown in Figure 24. The preferred habitat of the Green-winged Teal was the intertidal marsh east (Figure 26). However, Green-winged Teal activity gradually moved to other habitats and by spring, most of the Green-winged Teal were using the intertidal marsh north (Figure 25).

We saw a total of 1291 Mallards over the study period (22% of dabbling ducks). The earliest arrival was 17 September 1990 and the latest departure was 19 May 1991, during which time their frequency of occurrence was 95%. Most of the Mallards (54%) were reported in the winter when a peak of 151 Mallards was recorded on 31 December 1990 (Figure 27). Every habitat was used by the Mallard except the subtidal zone. The preferred habitat was the intertidal flats, followed by the intertidal marsh north and the intertidal marsh south (Figure 28). Major concentrations of Mallards during the study period are shown in Figure 29.

Northern Pintail numbers totalled 116 birds (2% of dabbling ducks). The earliest arrival date was 10 September 1990 and the latest departure date was 21 April 1991. During this period pintails were observed on less than half the surveys (frequency of occurrence = 45%) although we often saw more than 10 Northern Pintails in any 1 day (Figure 30). A peak number of 17 birds was recorded on 7 April 1991. The Northern Pintail preferred the intertidal marsh east in autumn and winter but by spring they had shifted their use to the intertidal marsh north (Figure 31).

A total of 15 Wood Ducks was tallied during the survey: 6 on 4 February 1991 in the intertidal marsh east, 6 again on 17 March 1991 in the intertidal marsh south, 2 on 7 April 1991 in the freshwater marsh and 1 on 25 August 1991, in the freshwater marsh. Outside of the survey we sighted 7 Wood Ducks in the freshwater marsh on 1 September 1991.

We saw a total of 15 Gadwall over the study period. Sightings occurred in every month between its earliest arrival on 8 October to the latest departure on 25 February 1991; its frequency of occurrence was 29% during that period. A maximum number of 3 birds was recorded on 3 occasions. In autumn the Gadwall used the intertidal marsh north exclusively (8 birds) but in winter the Gadwall was seen in the intertidal marsh east (3 birds), the intertidal marsh north (2 birds) and the intertidal flats (2 birds).

The numbers of Northern Shovellers observed over the study period totalled 7 birds: 1 bird on 10 September 1990, 4 birds on 17 September 1990, 1 bird on 23 September 1990, and 1 isolated individual on 28 October, 1990. Six of the Northern Shovellers were reported using the intertidal marsh east.

Five Eurasian Wigeon were reported over the study period: 1 on 18 November 1990, 2 on 17 February 1991 and 2 on 25 March 1991. They were seen using the intertidal marshes east and south and in the intertidal flats.

Three Blue-winged Teal were reported on 29 April 1991 using the intertidal marsh north.

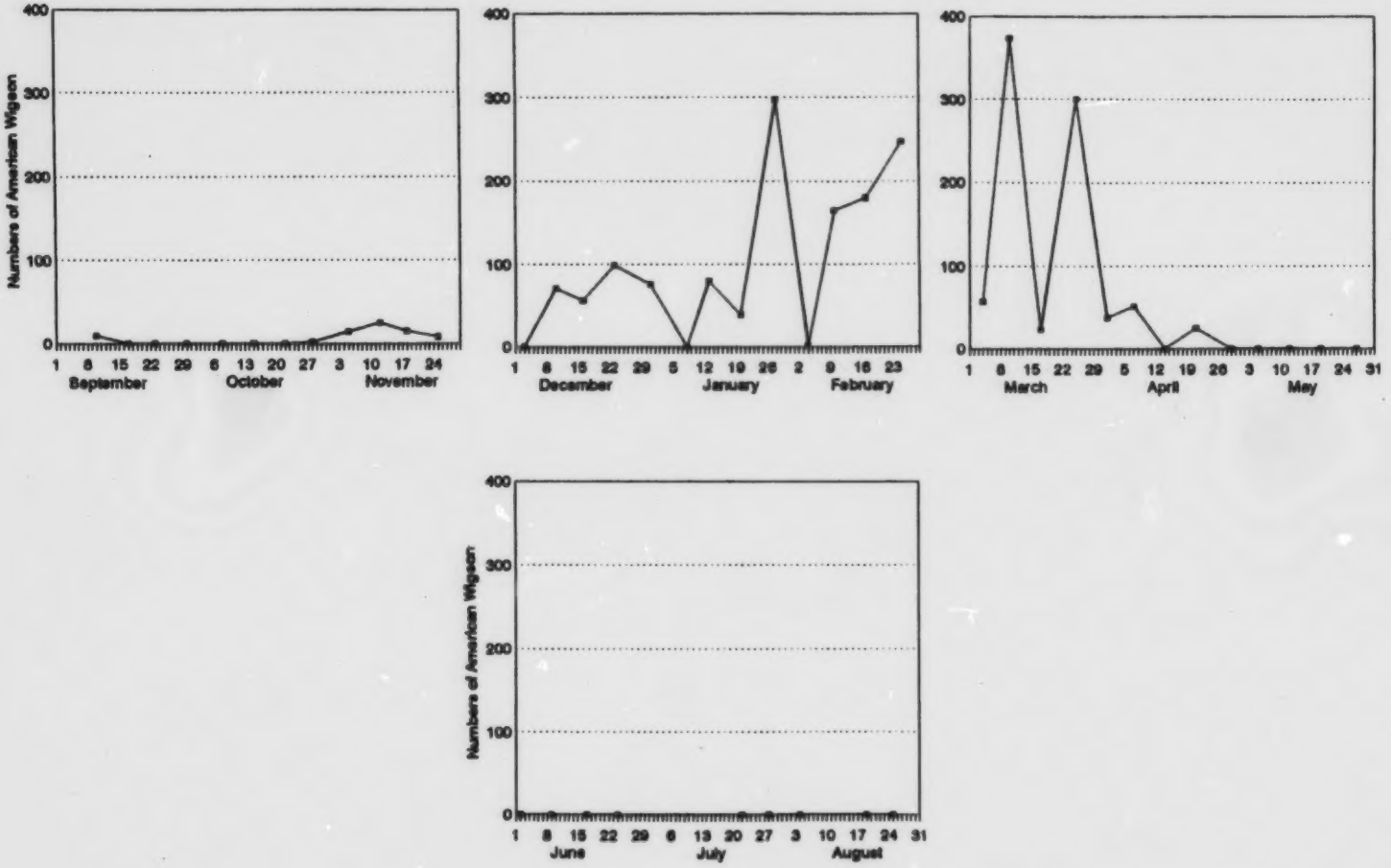


Figure 21. *Seasonal fluctuations in the numbers of American Wigeon on the Fanny Bay - Little Bay wetlands, autumn 1990 through summer 1991.*

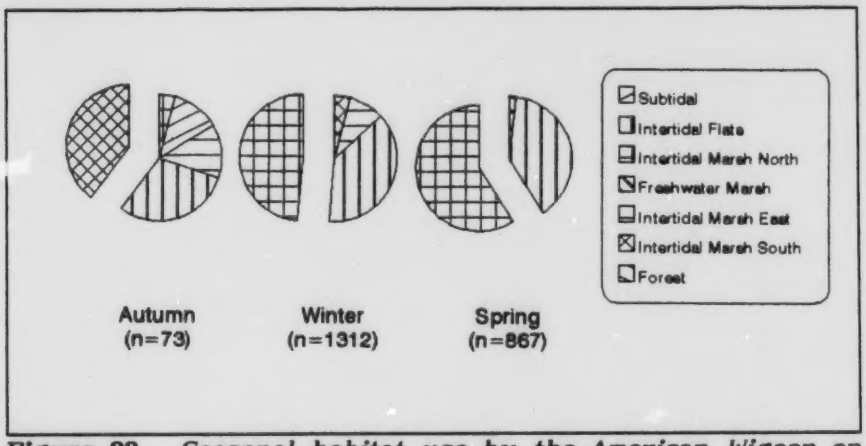


Figure 22. *Seasonal habitat use by the American Wigeon on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

Figure 23. *Major concentrations of the American Wigeon on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991, shown as proportions of total American Wigeons seen. A-43% B-19%.*

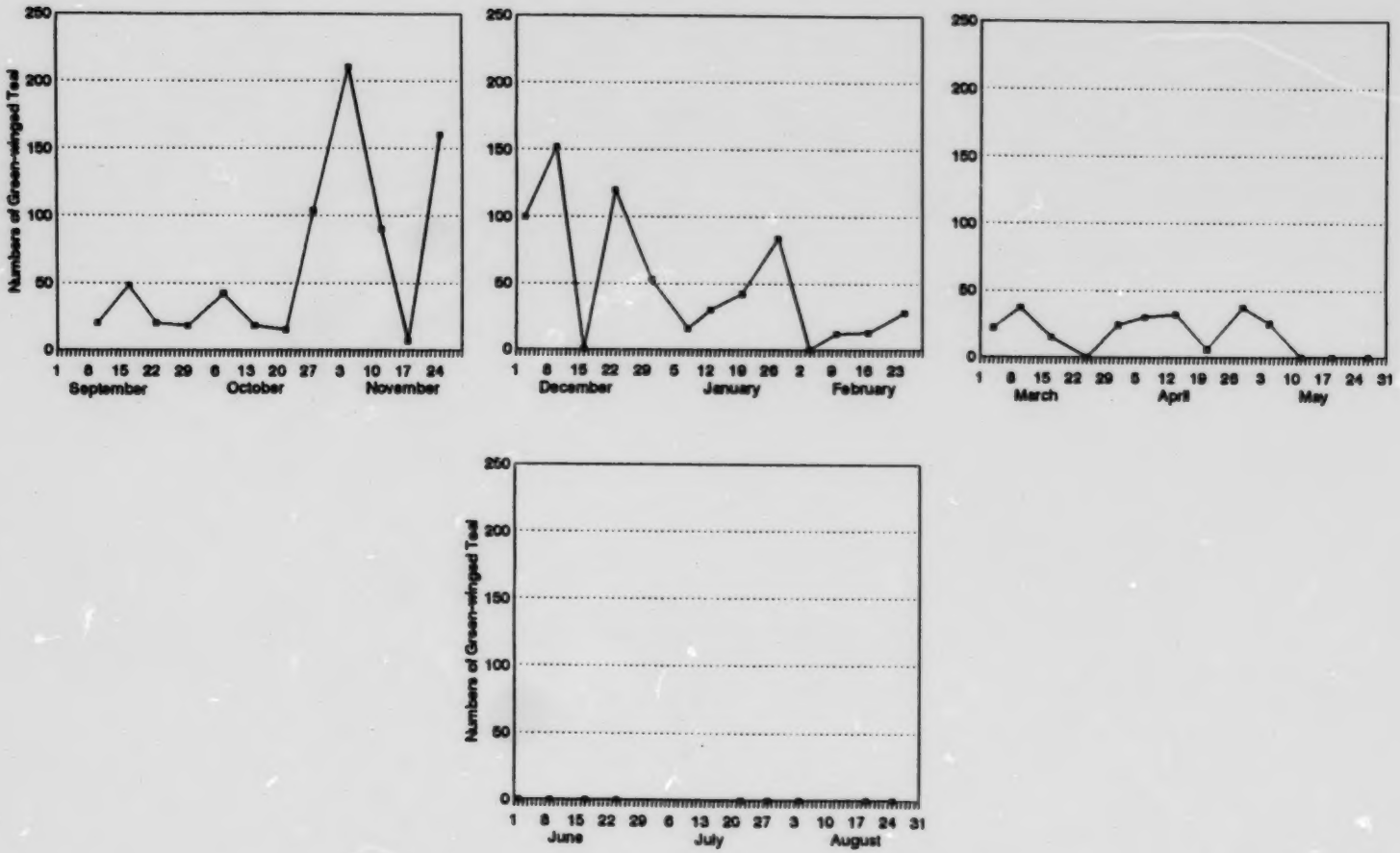


Figure 24. *Seasonal fluctuations in the numbers of Green-winged Teal on the Fanny Bay - Little Bay wetlands, autumn 1990 through summer 1991.*

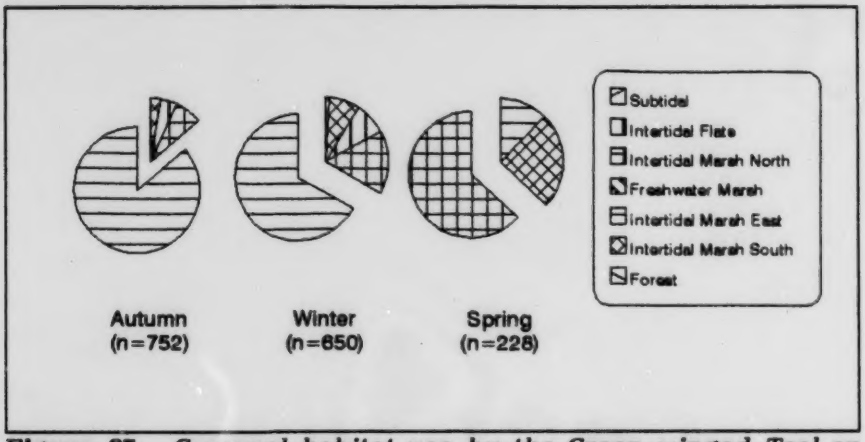


Figure 25. *Seasonal habitat use by the Green-winged Teal on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

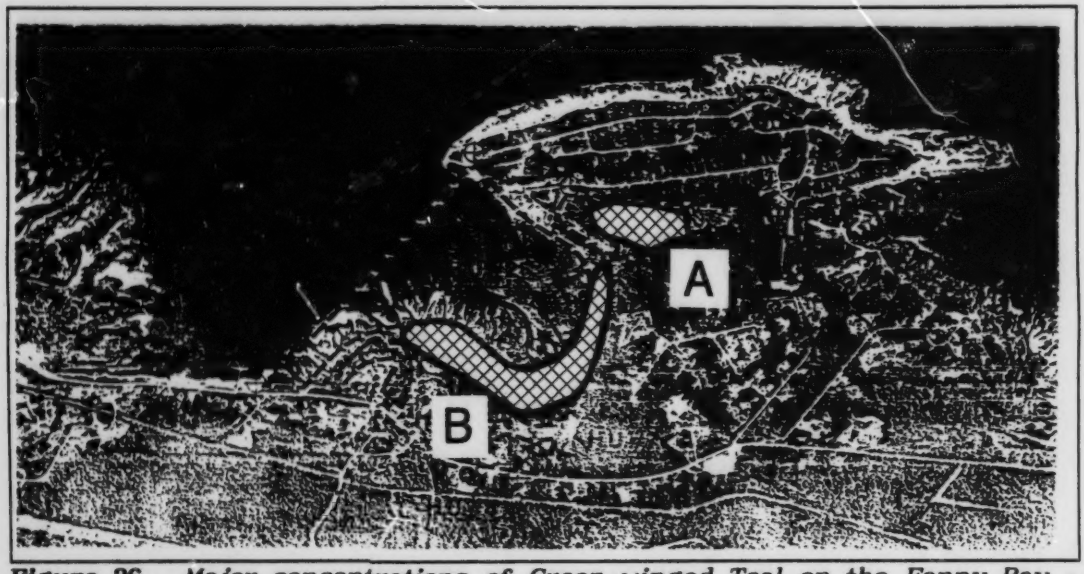


Figure 26. *Major concentrations of Green-winged Teal on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991, shown as proportions of total Green-winged Teal seen. A-59% B-11%.*

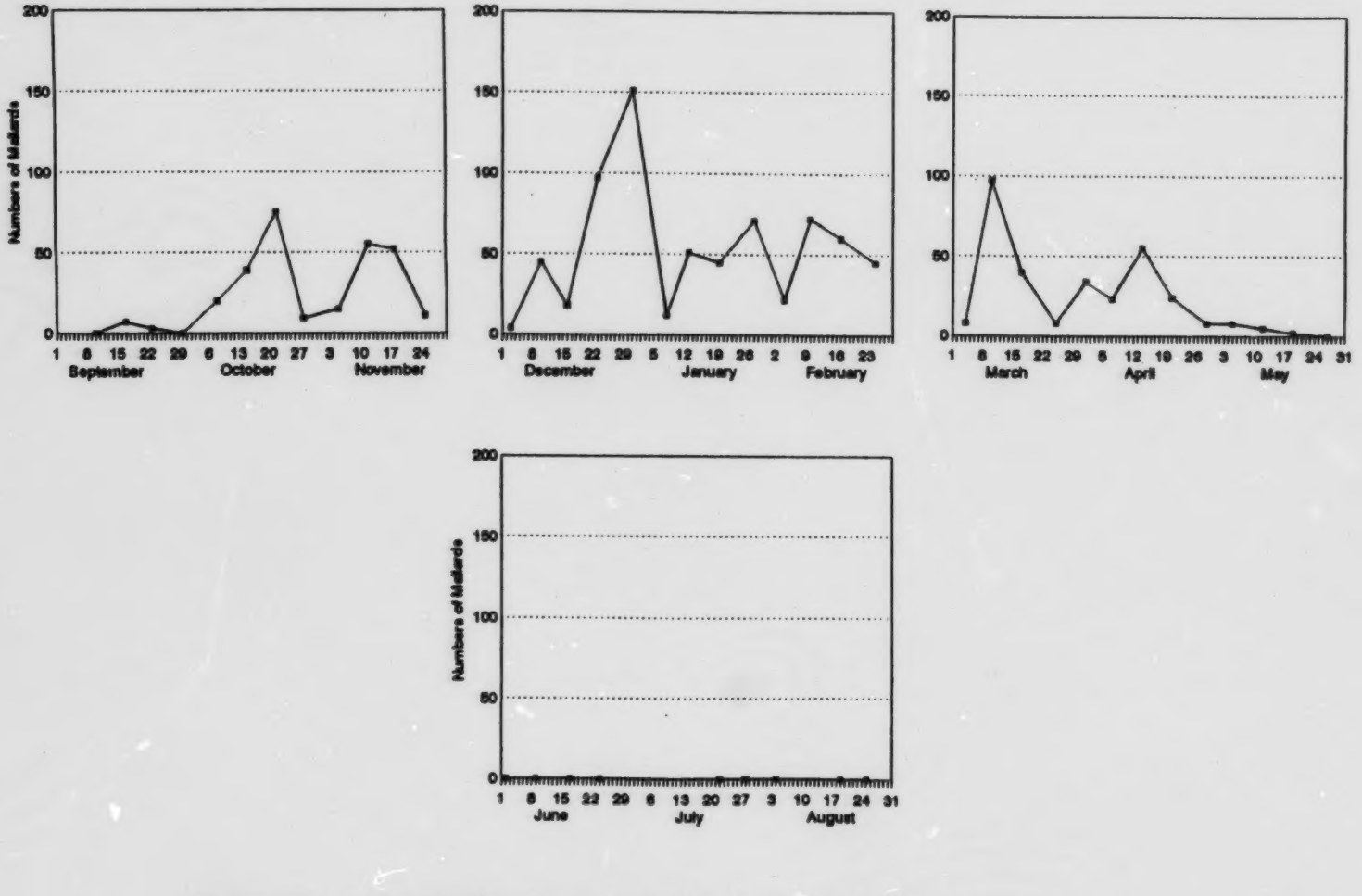


Figure 27. *Seasonal fluctuations in the numbers of Mallards on the Fanny Bay - Little Bay wetlands, autumn 1990 through summer 1991.*

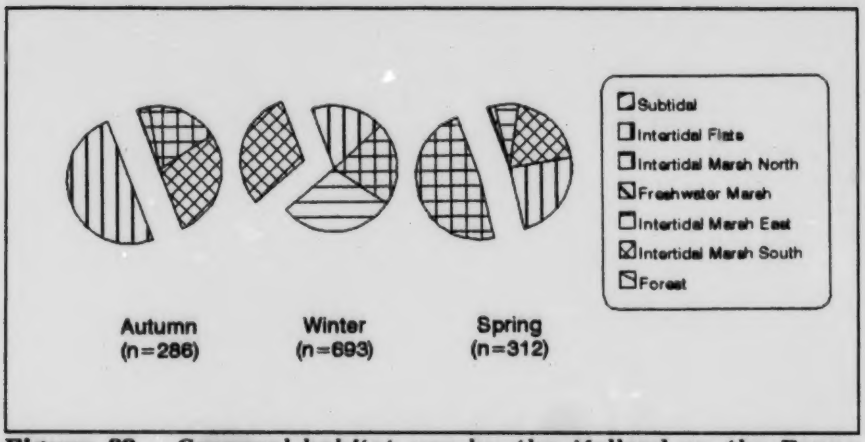


Figure 28. *Seasonal habitat use by the Mallard on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

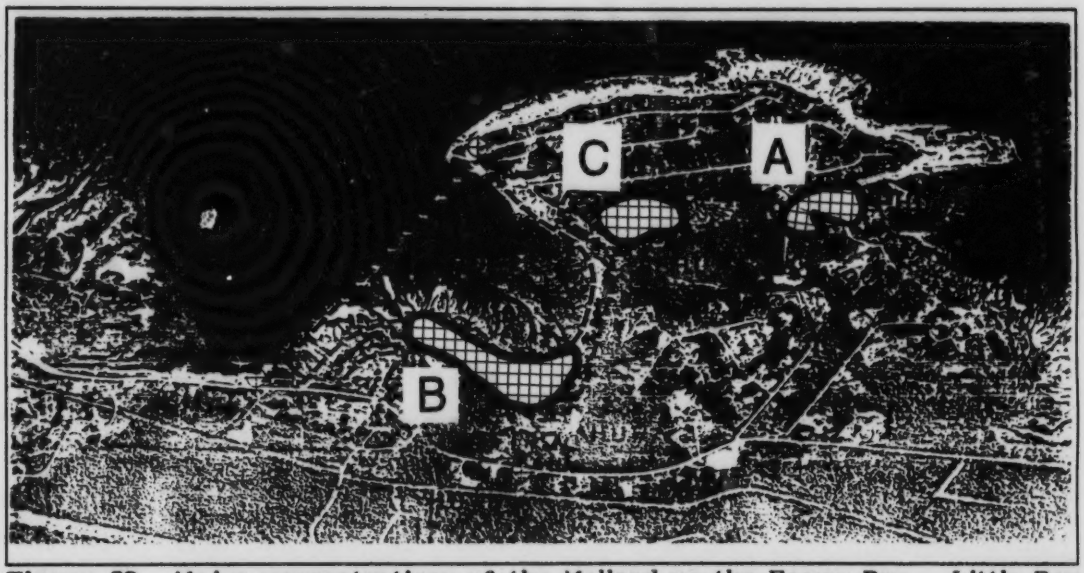


Figure 29. *Major concentrations of the Mallard on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991, shown as proportions of total Mallards seen. A-22% B-15% C-12%.*

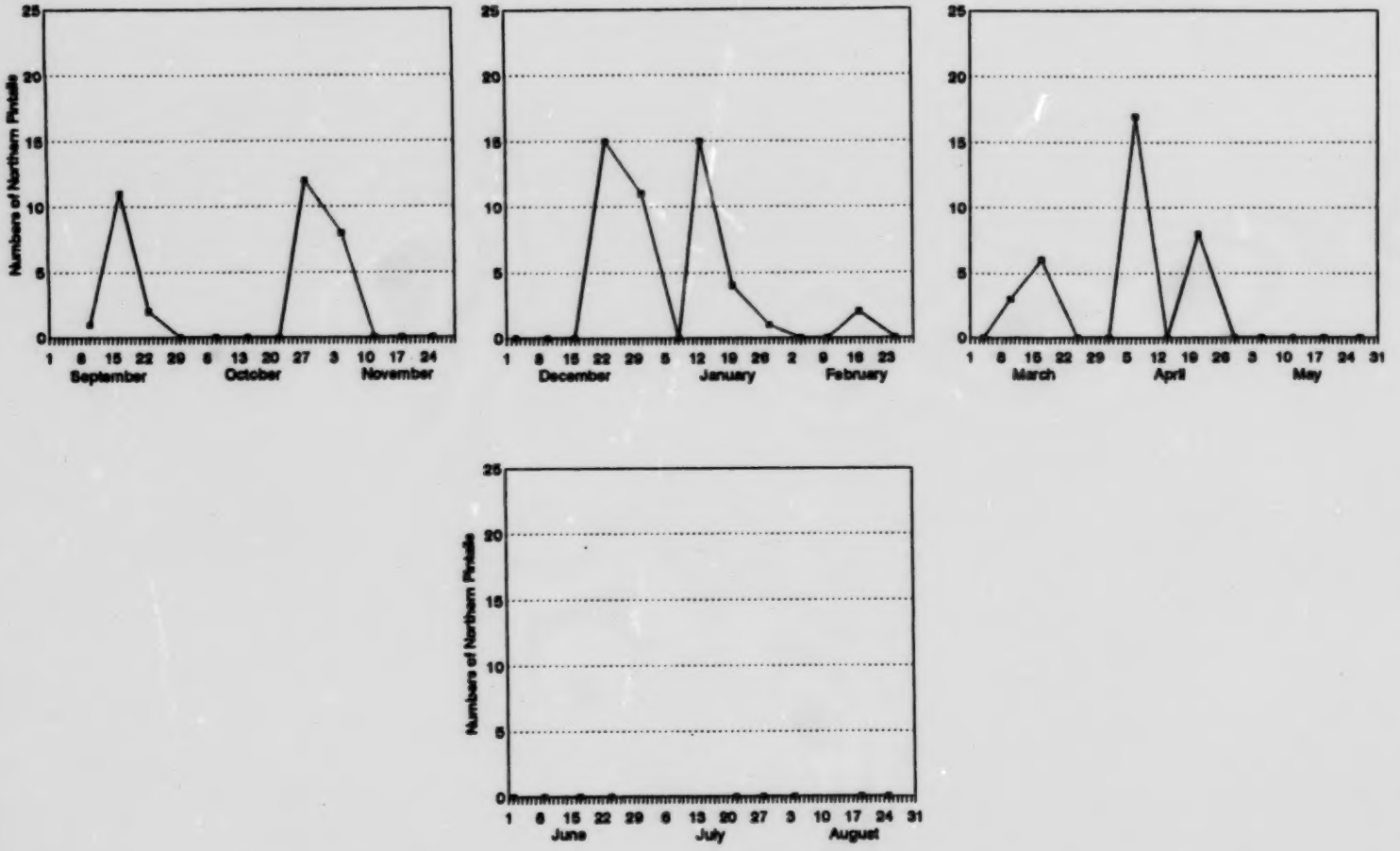


Figure 30. *Seasonal fluctuations in the numbers of Northern Pintails on the Fanny Bay - Little Bay wetlands, autumn 1990 through summer 1991.*

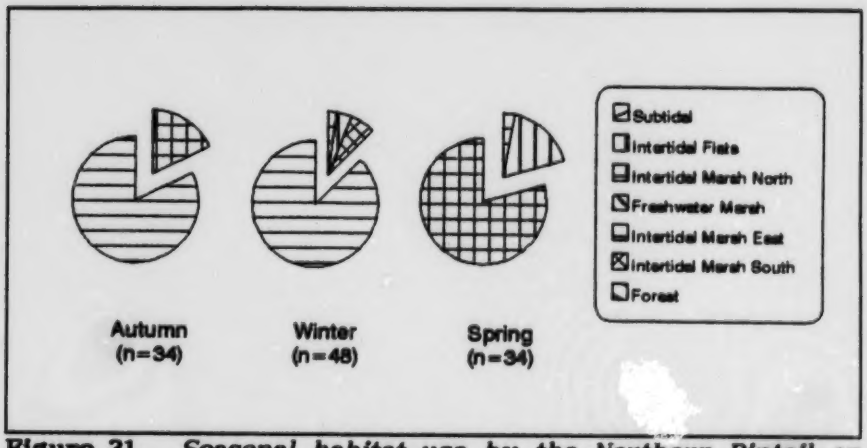


Figure 31. *Seasonal habitat use by the Northern Pintail on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

Diving Ducks: During the study period, 12 species of diving ducks were recorded with a combined total of 11,821 birds (44% of all birds). The most numerous were the scaups of which a small fraction was identified as the Greater Scaup. The White-winged Scoter was the second most abundant followed by the Surf Scoter and Bufflehead. The remaining species (together comprising < 4% of all diving ducks) were: Common Goldeneye, Barrow's Goldeneye, Common Merganser, Hooded Merganser, Red-breasted Merganser, Harlequin Duck, Oldsquaw and Black Scoter. In total, more than half of the diving ducks were not fully identified: scaup species (44% of scaups), scoter species (6% of scoters) and diving duck species (7% of all diving ducks). This uncertainty cautions that the actual proportion of any diving duck species could be significantly different from the percentage of the birds identified to species.

From the small population present at the end of summer, diving duck numbers continued to build through the autumn of 1990 (Figure 32). The increase was due mainly to scoters through September and October and then in November scaup arrivals became significant. More than half of all diving ducks were seen over the winter months (53%). Numbers peaked at 762 (mostly reported as scaup species) on 16 December 1990. This one-day tally represents 6% of all diving ducks and 3% of all birds during the entire survey. The numbers of diving ducks reported almost always remained above 350 birds from 10 December 1990 until 17 March 1991; the exception on 8 January 1991 occurred when weather conditions prevented completion of the survey. Even during the summer, diving ducks such as the White-winged Scoter or the Common Merganser were present most of the time (78%); on one day, 140 birds were recorded in that season.

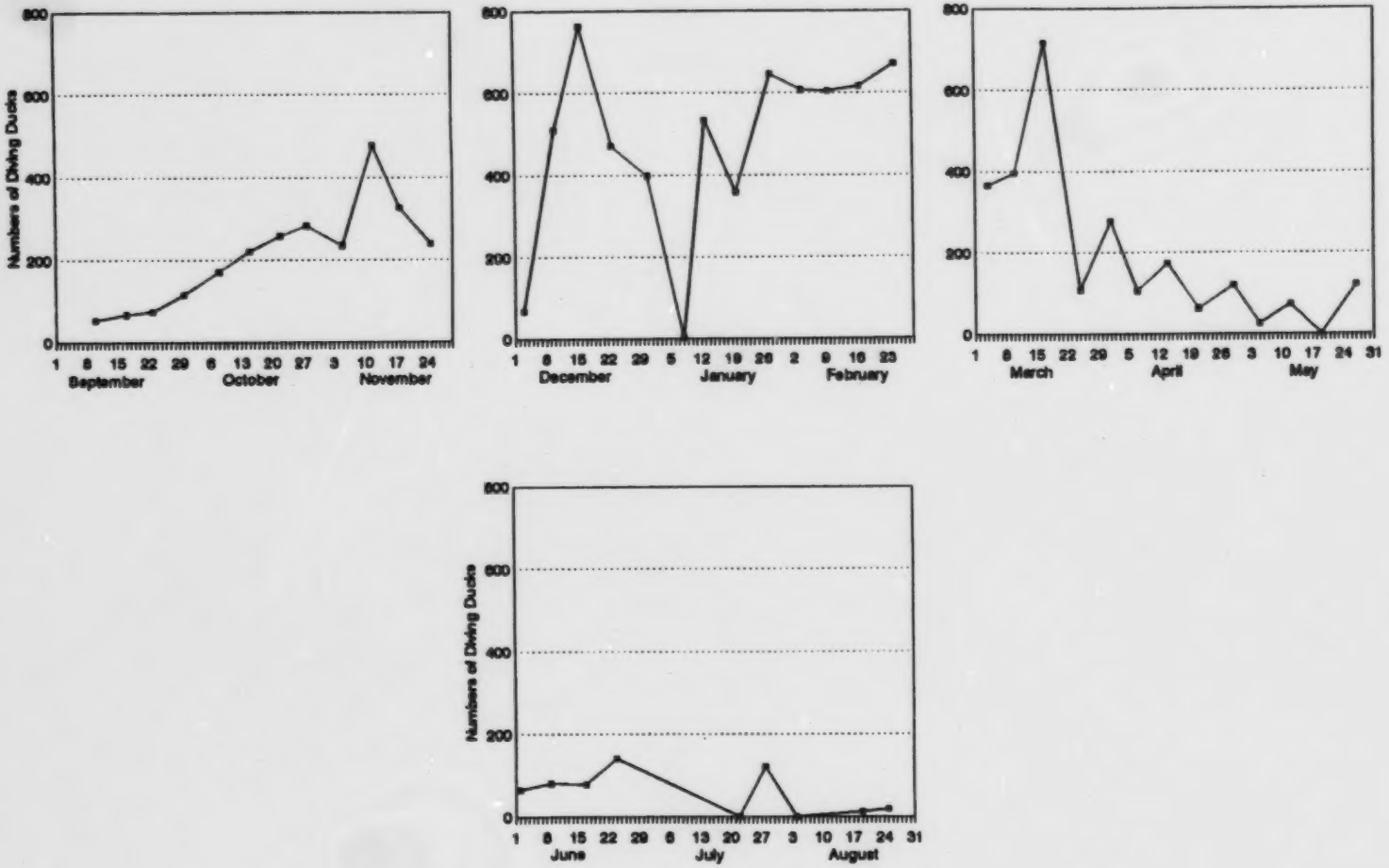


Figure 32 *Seasonal fluctuations in numbers of diving ducks on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

Although diving ducks were seen in all 7 habitat units, they preferred the intertidal flats in every season (76% overall). Use of the subtidal area (17%) and the intertidal marsh north (7%) varied in spring and summer (Figure 33).

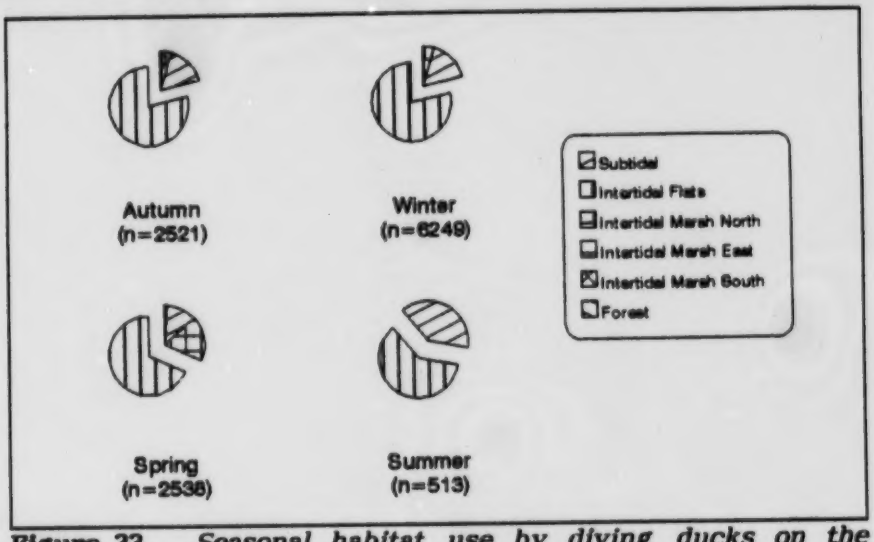


Figure 33. *Seasonal habitat use by diving ducks on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

We saw a total of 5372 scaups (45% of all diving ducks). The Greater Scaup was reported 3 times for a total of 129 birds: 120 were using the intertidal flats on 5 November 1990, 8 were using the subtidal area on the same day and 1 was recorded on 4 March 1991 in the intertidal marsh south. Since the vast remainder of scaups was identified simply as scaup species, all data have been combined to allow meaningful analysis. From their earliest arrival on 22 October 1990 to their latest departure on 25 March 1991, scaups were present almost continuously (frequency of occurrence 96%). Most scaups were seen in winter (72%) when the numbers reported were usually 250 individuals or more (77% of the days surveyed). The peak number of 550 was recorded on 16 December 1990; seasonal fluctuations are shown in Figure 34. In every season, scaup used the intertidal flats most (72% overall); use of the subtidal habitat (15% overall) was highest in winter; the intertidal marsh north (12% overall) saw highest use in spring (Figure 35). Major concentrations of scaups are shown in Figure 36.

Three species of scoters were seen: the White-winged Scoter, the Surf Scoter and the Black Scoter. Seasonal fluctuations in the numbers of each species, along with the cumulative totals for all scoters, are shown in Figure 37. The peak number of 330 scoters was seen on 4 March 1991; they were identified simply as scoter species. Numbers for habitat use have been combined for all scoters; most use throughout the seasons was found in the intertidal flats habitat followed by the subtidal habitat (Figure 38).

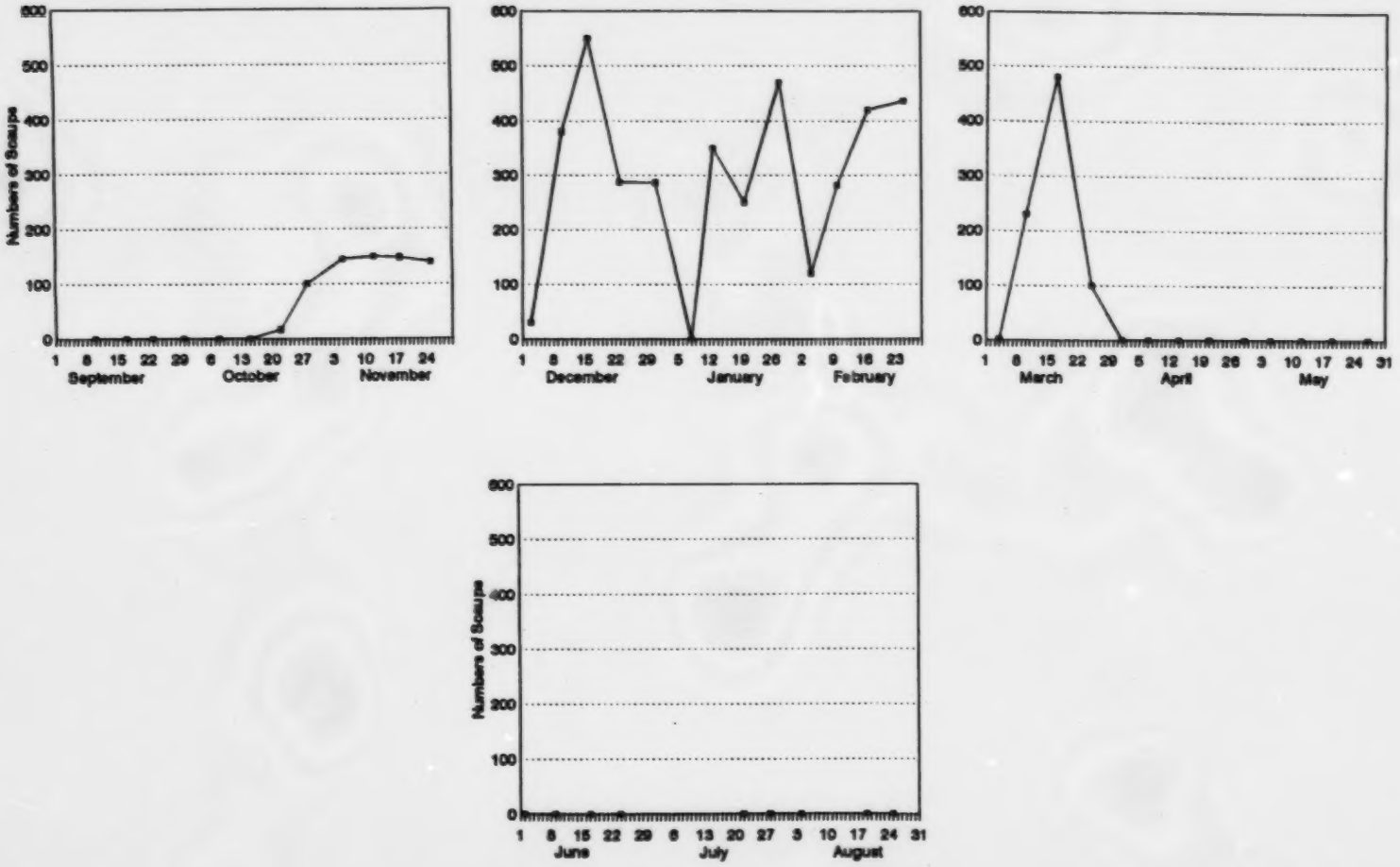


Figure 34 *Seasonal fluctuations in numbers of scaups on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

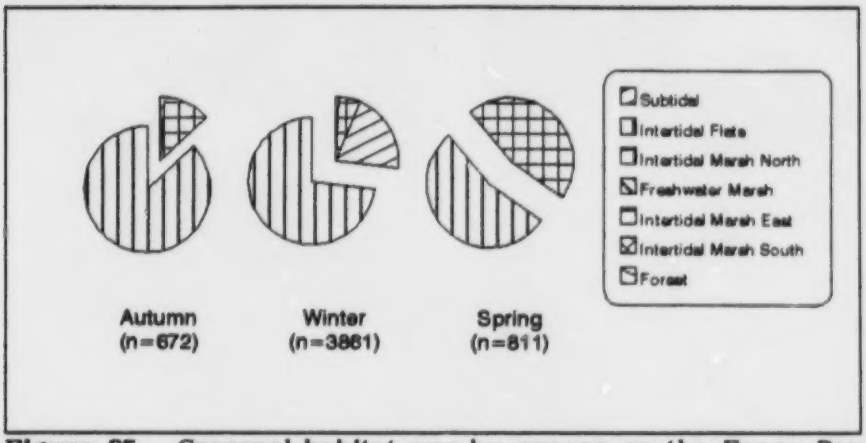


Figure 35. *Seasonal habitat use by scaups on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

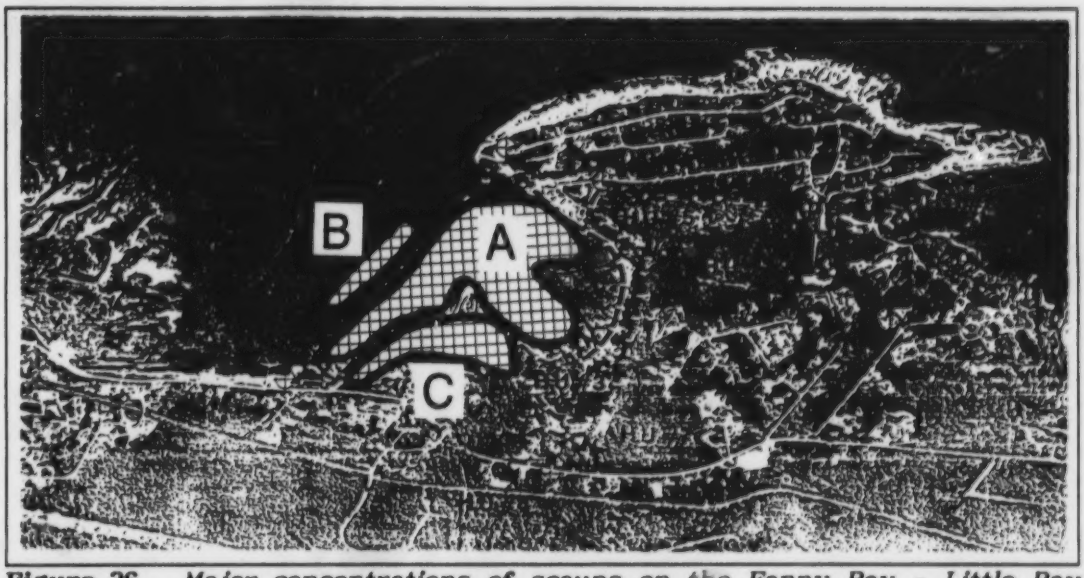


Figure 36. *Major concentrations of scaups on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991, shown as proportions of total scaups seen. A-66% B-15% C-14%.*

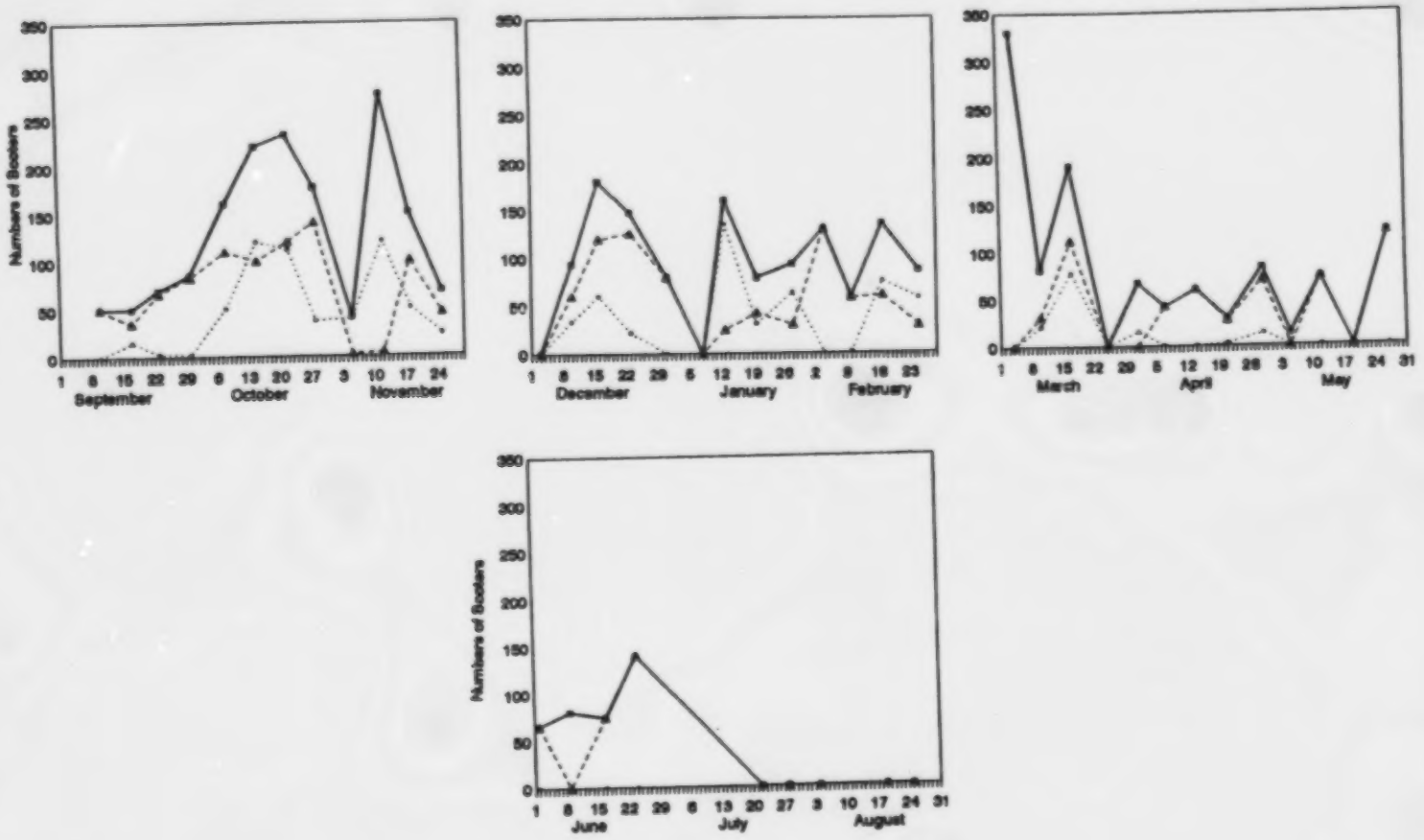


Figure 37 *Seasonal fluctuations in numbers of White-winged Scoters (dashed line), Surf Scoters (dotted line) and all scoters (solid line) on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

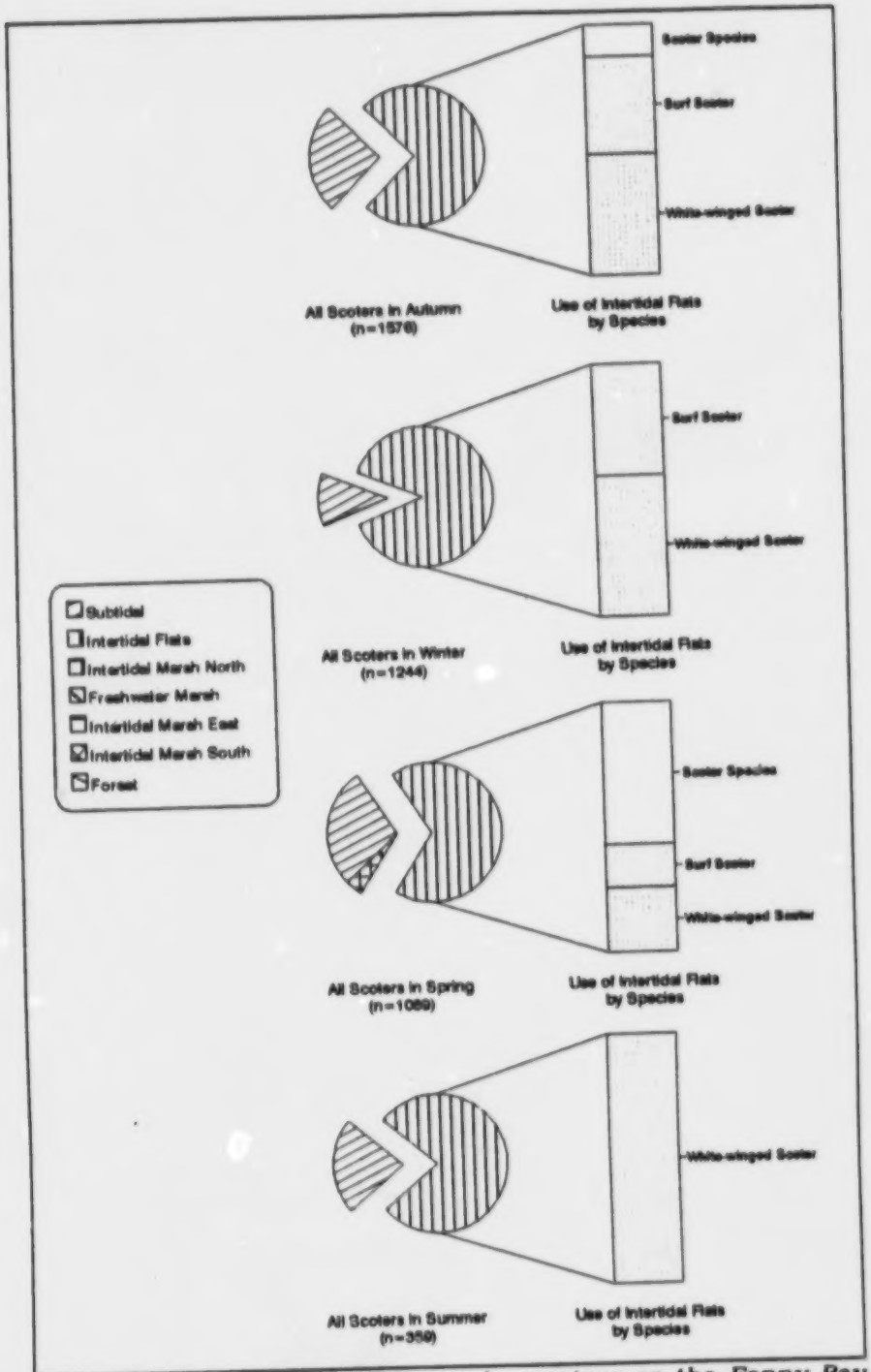


Figure 38. *Seasonal habitat use by scoters on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

The White-winged Scoter was the most numerous scoter and the second most common species of diving duck with a total of 2429 birds recorded (21% of all diving ducks). The earliest arrival was 10 September 1990 and the latest departure was 24 June 1991. Numbers peaked at 140 birds on 28 October 1990 and again on 24 June 1991 (Figure 37). Most habitat use occurred in the intertidal flats (66%) followed by the subtidal area (32%); however in spring the use of the intertidal marsh north was mainly by this species (Figure 38). Major White-winged Scoter concentrations are shown in (Figure 39).

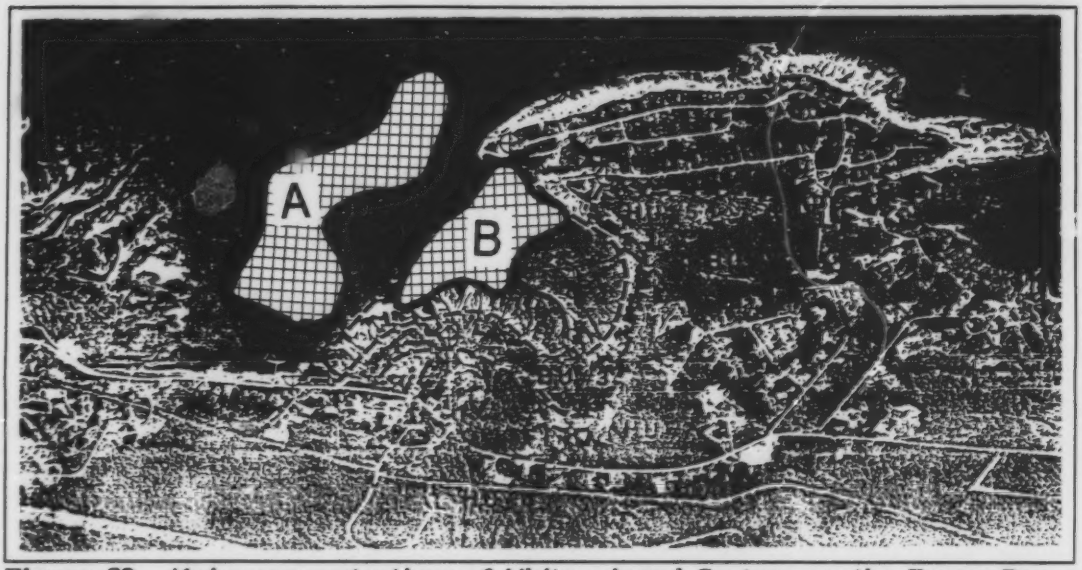


Figure 39. *Major concentrations of White-winged Scoters on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991, shown as proportions of total White-winged Scoters seen. A-45% B-28%.*

Surf Scoter numbers totalled 1178 birds (10% of all diving ducks). The earliest arrival was 17 September 1990 and the latest departure was 29 April 1991. Reported numbers peaked at 135 birds seen feeding on 13 January 1991 (Figure 37); on that day the Surf Scoter accounted for 84% of all scoters seen. The area used most by the Surf Scoter was the intertidal flats (87%); the remainder of its habitat use occurred in the subtidal zone during the autumn and winter. Major concentrations of the Surf Scoter favoured the deeper portion of the intertidal flats habitat unit (Figure 40).

We saw 6 Black Scoters using the intertidal marsh south on 20 January 1991.

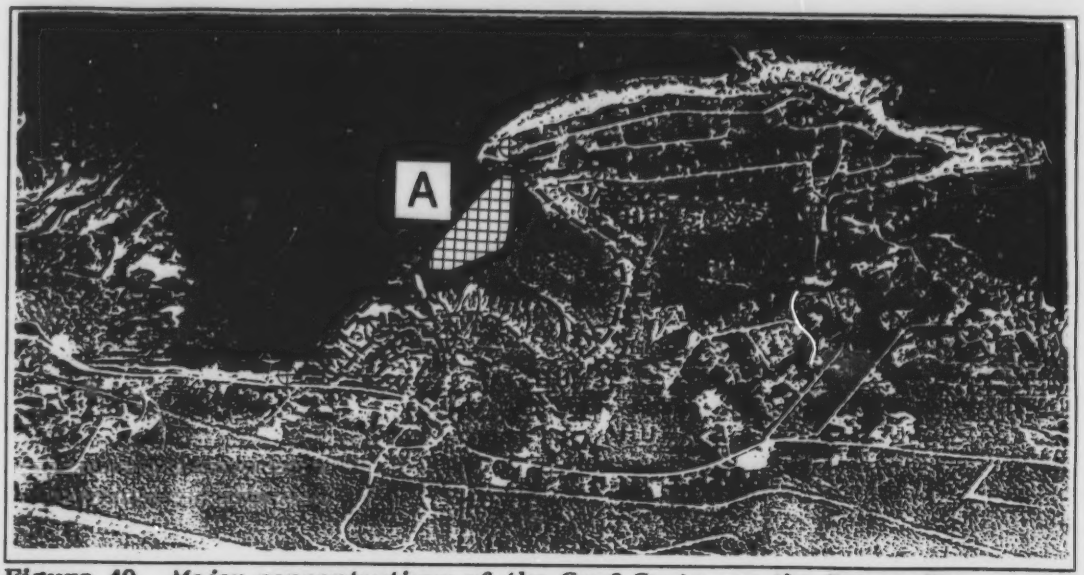


Figure 40. *Major concentrations of the Surf Scoter on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991, shown as proportions of total Surf Scoters seen. A-29%.*

The Bufflehead ranked fourth in abundance among the diving ducks with a total of 907 birds seen (8% of all diving ducks). From the earliest arrival on 22 October 1990 to the latest departure on 5 May 1991, its frequency of occurrence was 97% but the numbers present fluctuated. Groups as large as 50 or 60 birds were seen feeding in autumn and winter; in spring a one-day peak of 102 birds was reported on 14 April 1991 (Figure 41). Although the Bufflehead was seen using every habitat, the intertidal flats was preferred in every season (90% over the study period; Figure 42). Major concentrations of the Bufflehead favoured the deeper portion of the intertidal flats (Figure 43).

Two species of goldeneye were seen plus 22 birds that were reported simply as goldeneye species. The Common Goldeneye was more than 3 times as numerous as the Barrow's Goldeneye. Seasonal fluctuations in the numbers of both are shown in Figure 44.

The total Common Goldeneye reported over the study period was 191 birds. The earliest arrival was 12 November 1990 and the latest departure reported was on 14 April, 1991 (goldeneye species were present until the following week). They were observed on 74% of all counts over this period. In contrast with Barrow's Goldeneye, almost all (96%) of the Common Goldeneye were seen in winter and spring with the peak number of 32 recorded on 1 April 1991 (Figure 44). Two Common Goldeneyes were observed engaged in courtship activities on 23 December 1990. The preferred habitat of this species was the intertidal flats (87%; Figure 45).

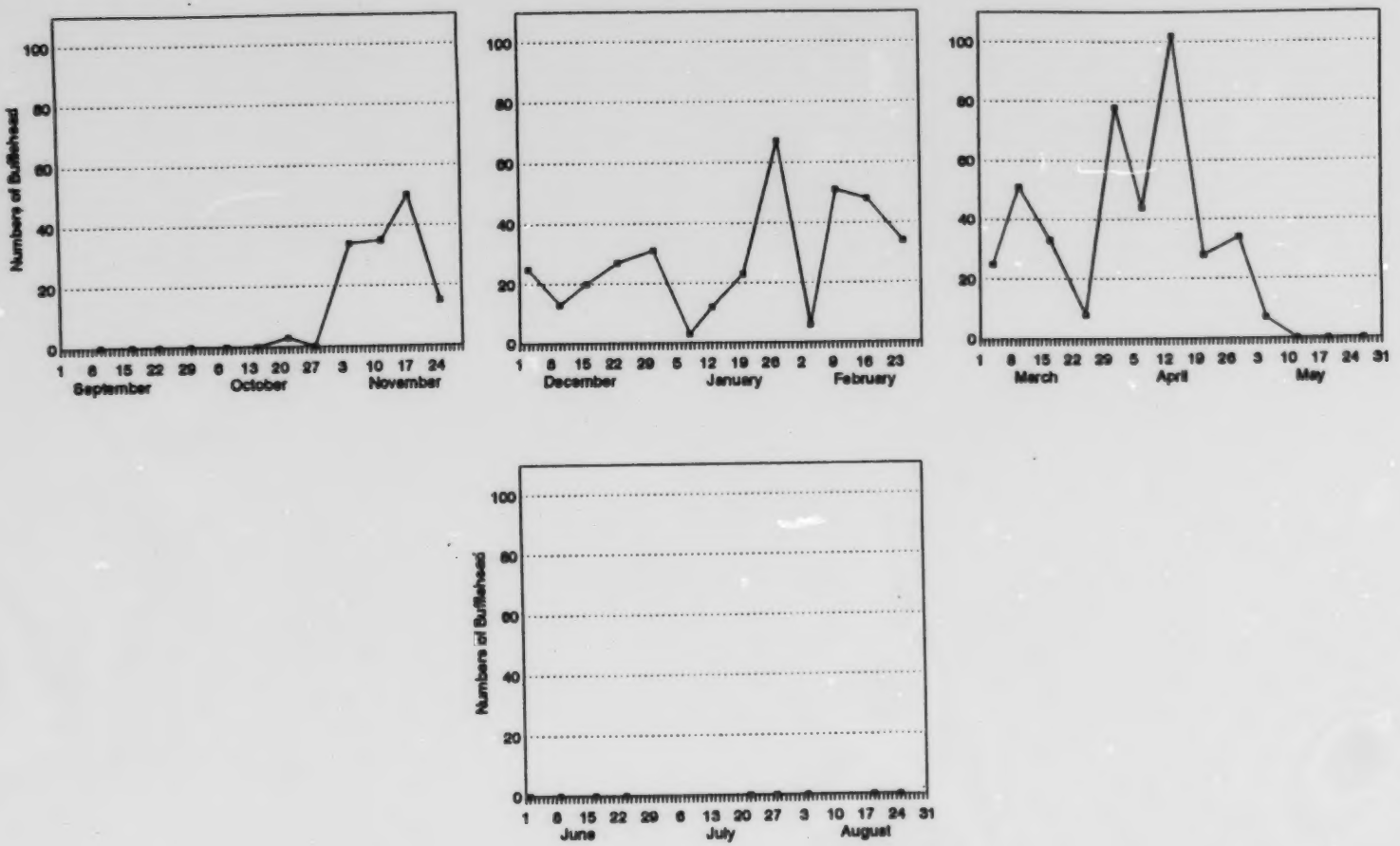


Figure 41. *Seasonal fluctuations in numbers of Bufflehead on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

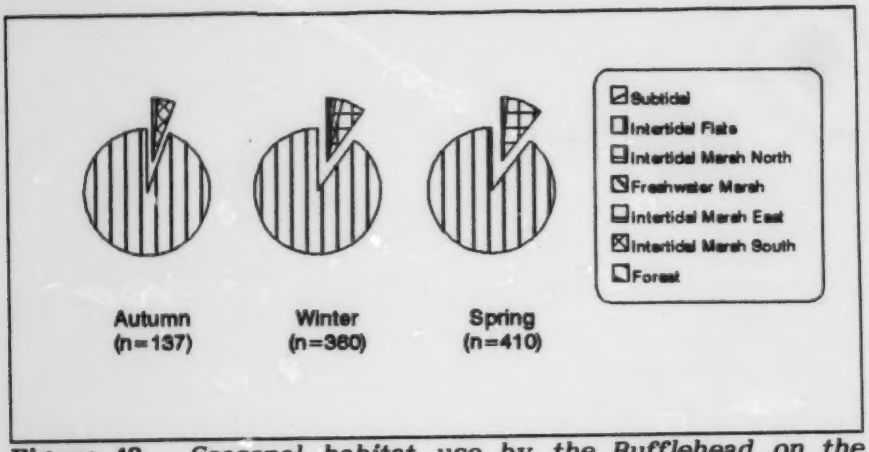


Figure 42. *Seasonal habitat use by the Bufflehead on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

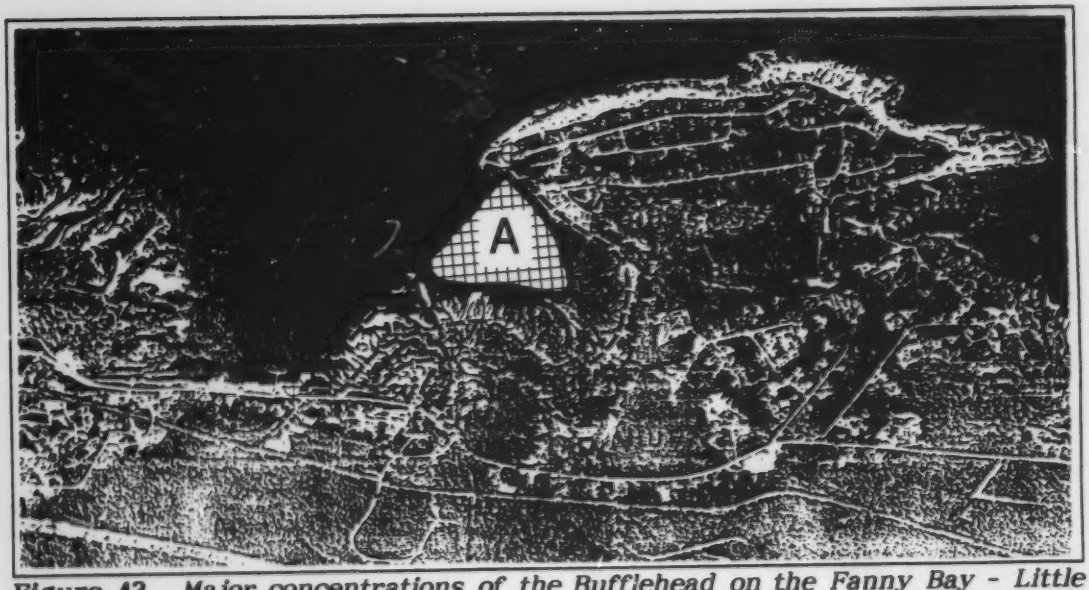


Figure 43. *Major concentrations of the Bufflehead on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991, shown as proportions of total Bufflehead seen. A-14%.*

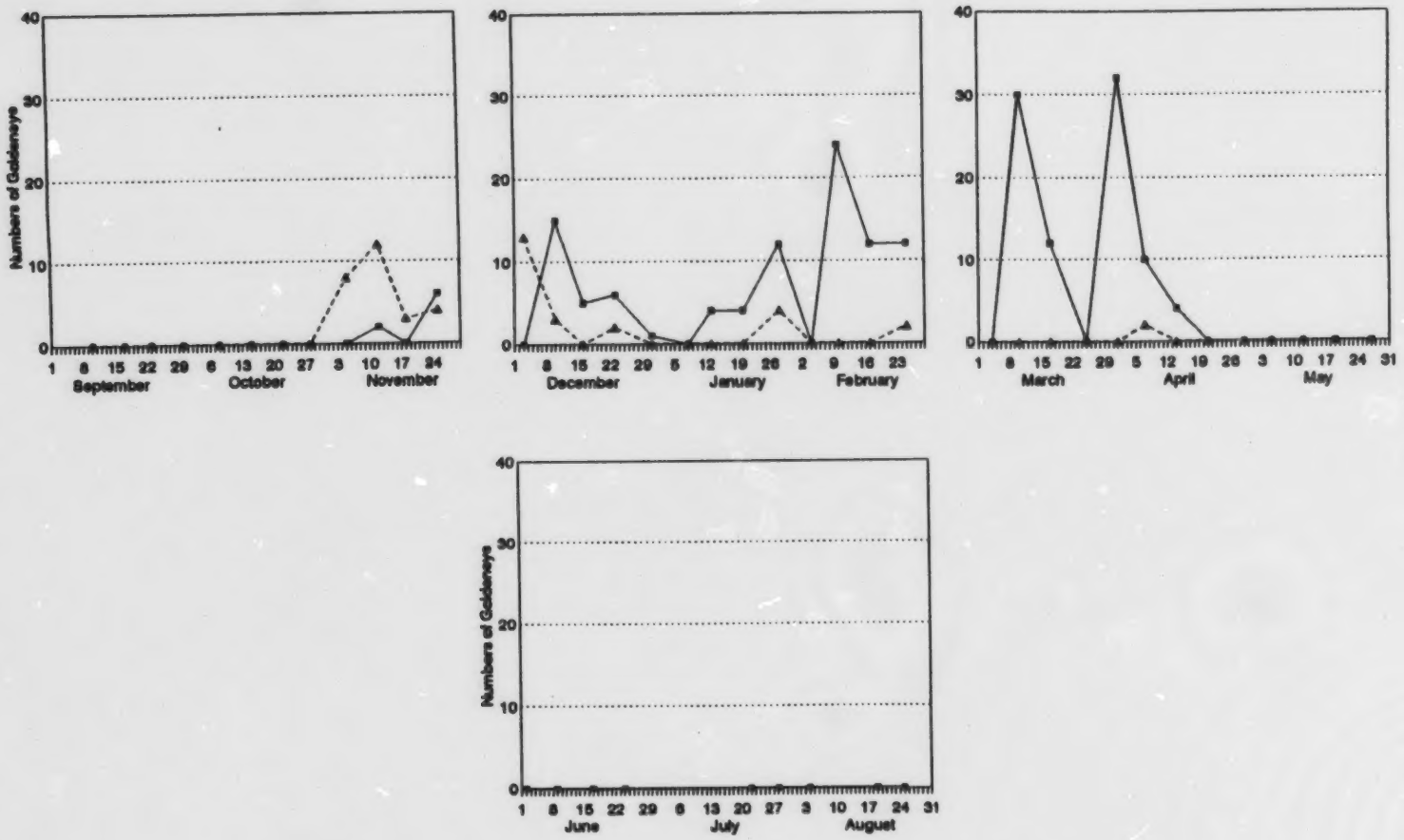


Figure 44. *Seasonal fluctuations in numbers of the Common Goldeneye (solid line) and Barrow's Goldeneye (dashed line) on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

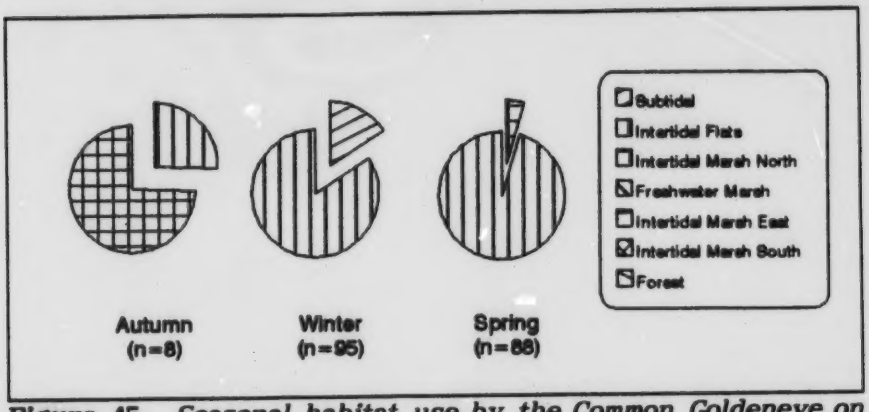


Figure 45. *Seasonal habitat use by the Common Goldeneye on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

The total Barrow's Goldeneye observed over the study period was 53 birds. Its presence was intermittent from the earliest arrival on 5 November to the latest departure on 7 April 1991; Barrow's Goldeneye arrived earlier than the Common Goldeneye and most or all of them left earlier. Unlike the Common Goldeneye, the Barrow's Goldeneye was seen mostly in late autumn and early winter (85%; Figure 44) with a peak number of 13 birds recorded on 3 December 1990. The habitat used most by Barrow's Goldeneye was the intertidal flats (81; Figure 46).

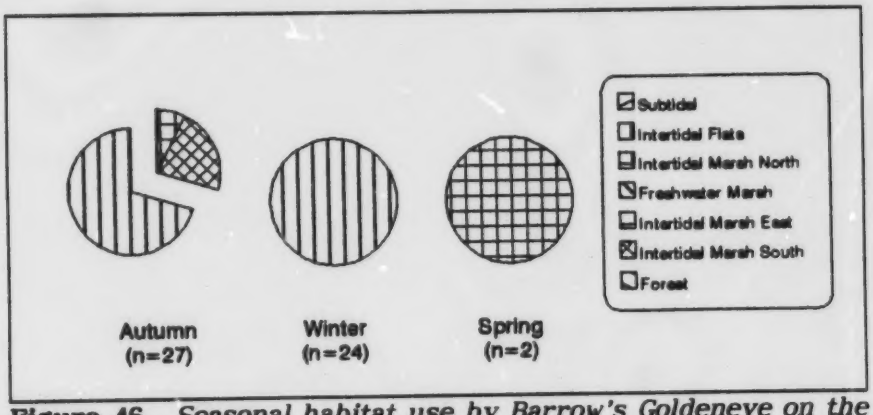


Figure 46. *Seasonal habitat use by Barrow's Goldeneye on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

Three species of mergansers were recorded totalling 97 birds including 19 birds identified simply as merganser species. On 30 September 1990, the merganser total peaked at 22 birds. This occurred 2 weeks after the number of Common Mergansers peaked and coincided with a peak of Hooded Mergansers. Habitat use by all mergansers is shown in Figure 47.

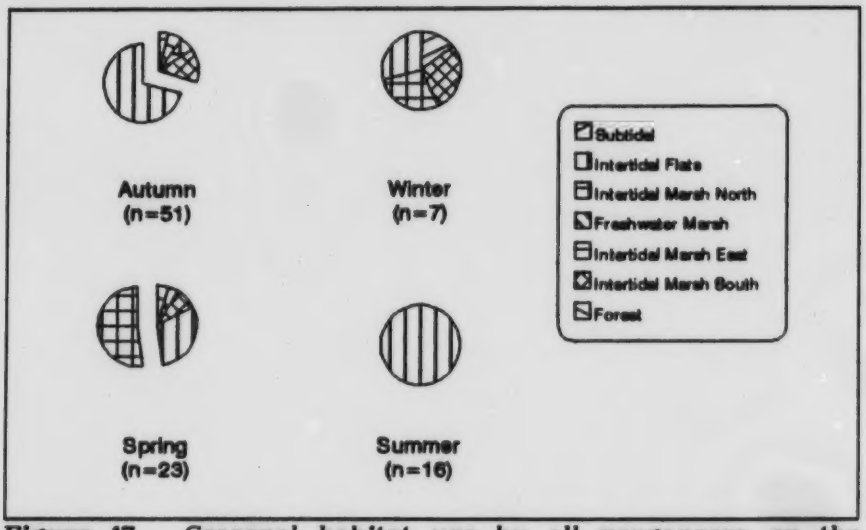


Figure 47. *Seasonal habitat use by all mergansers on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

The Common Merganser was the most abundant merganser with 50 birds reported. The number seen in each season varied little (from 14 to 19 birds) except in winter when only one was noted. Normally 7 or more individuals were present in the study area when the Common Merganser was seen. The peak of 13 was recorded on 17 September 1990. The intertidal flats was the favoured habitat (68% overall) except in spring when most Common Merganser use was in the intertidal marsh north. Outside of the study period, we saw 89 Common Mergansers using the intertidal flats on 1 September 1991.

Hooded Merganser numbers totalled 22 birds. From the earliest arrival on 30 September 1990 to the latest departure on 17 February 1991, it was seen on 52% of all surveys. The peak number of 4 was recorded on 30 September and again on 28 October, 1990. The Hooded Merganser was seen using every habitat except the subtidal zone and the freshwater marsh but the intertidal marsh south was used more than any other habitat (41% overall).

We saw a total of 6 Red-breasted Mergansers over the study period : 1 on 25 November 1990 in the intertidal marsh north, 1 on 25 February 1991 in the subtidal habitat, 3 on 21 April in the intertidal flats and 1 on 5 May, 1991 in the subtidal zone.

A total of 50 Harlequin Ducks were seen over the study period. The earliest arrival was 10 September 1990 and the latest departure was 10 February 1991. It was seen mostly in autumn (92%) when its frequency of occurrence was 75%; their numbers peaked at 10 ducks on 8 October 1990. The habitat most used by the Harlequin Duck was the intertidal flats (86%); the remainder of its time was spent in the subtidal zone.

Oldsquaw numbers totalled 14 birds over the study period: 4 birds on 5 November 1990, 7 on 13 January 1991, 1 on 10 March 1991 and 2 on 5 May 1991. All occurred in the subtidal habitat.

Raptors: The total number of raptors seen was 109 (<0.5% of all birds) recorded as 9 species. The Bald Eagle was by far the most abundant followed by Osprey, Red-tailed Hawk, and Merlin. The remainder included the Northern Harrier, Sharp-shinned Hawk, Turkey Vulture, Cooper's Hawk, American Kestrel and 4 birds recorded as hawk species.

A total of 71 Bald Eagles was tallied (65% of raptors). Its presence was recorded in every season with a 68% frequency of occurrence over the study period. Numbers reached their highest levels in winter (45%) when the peak of 6 Bald Eagles was seen; in summer numbers were lowest (10%). Every habitat unit was used by the Bald Eagle: the intertidal flats was preferred overall (39%) followed by the forest unit (25%) and the intertidal marsh north (21%). Seasonal variations from this pattern occurred: the forest was the favoured habitat in winter and the freshwater marsh was the second most frequented area in spring.

The observed numbers of Osprey totalled 7 birds (6% of raptors): 2 on 21 April 1991; 1 on 5 May; 1 on 9 June and 2 on 17 June, 1991; and 1 on 17 September 1990. Most Osprey were seen in the intertidal flats (4 birds), although the intertidal marsh south (2 birds) and the forest (1 bird) were also used.

The Red-tailed Hawk was recorded in 7 times over the study period (6% of raptors); all were of individuals observed between 17 September 1990 and 13 January 1991. The Red-tailed Hawk used the forest most but 2 of the sightings occurred in the freshwater marsh and 1 in the intertidal marsh east.

The Merlin also had 7 sightings of individuals (6% of raptors) which occurred on 10 September 1990, 17 September 1990, 12 November 1990, 10 December 1990, 13 January 1991, 28 January 1991 and 5 May 1991. The most used habitat was the forest followed by the intertidal marshes north, east and south.

There were 5 records for the Northern Harrier, all of lone birds: 5 November 1990, on 12 November 1990, on 25 November 1990 (harrasing teals), on 8 January 1991 and on 13 January 1991. All were seen in the intertidal marsh east; most were feeding or hunting.

We saw 4 Sharp-shinned Hawks on 8 October 1990 in the intertidal marsh east.

There were 2 Turkey Vultures seen on 17 September 1990 feeding in the forest habitat unit.

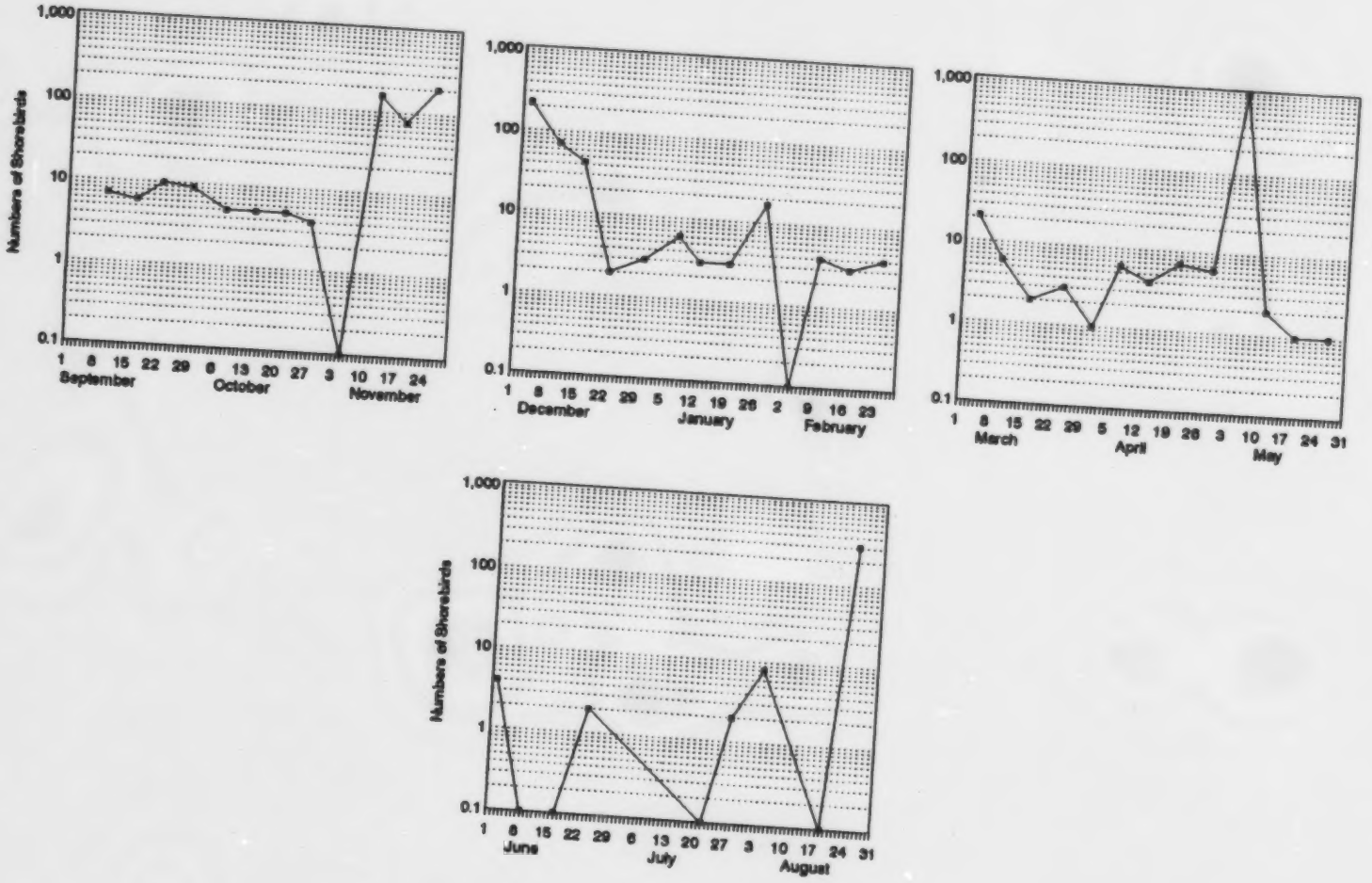


Figure 48. *Seasonal fluctuations in numbers of shorebirds on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

One Cooper's Hawk was seen on 22 July 1991 in the intertidal marsh north.

One American Kestrel was seen 21 April 1991 using the intertidal marsh north.

Pheasants: One Ring-necked Pheasant was seen on 2 June 1991 in the forest.

Grouse: The Ruffed Grouse was seen 6 times, all of individuals in the forest habitat unit: 15 October 1990, 7 April 1991, 14 April 1991, 29 April 1991, May 1991, and 2 June 1991. Campbell et al. (1990) identify Ruffed Grouse habitat as second growth deciduous and mixed deciduous and coniferous woods with nearby water. They are also known to fare best in brushy areas, preferring lower elevations with little human disturbance.

Shorebirds: In total, 2275 shorebirds (8% of all birds) used the Fanny Bay wetlands during some part of their life history. This total represents at least 7 species: Dunlin, Western Sandpiper, Killdeer, Greater Yellowlegs, Pectoral Sandpiper, and Common Snipe, as well as a few birds recorded as yellowlegs species and dowitcher species. More than one third (36%) of all shorebirds were recorded simply as shorebird species. In spring, we saw the highest numbers of shorebirds (48%) inflated by the large numbers of the Western Sandpiper (300) and unidentified shorebirds (700) seen on 5 May 1991; the tally for that one day accounted for 44% of all shorebirds seen over the study period. Autumn numbers were the second highest (21%) followed by winter (17%). Fluctuations in shorebird numbers is shown in Figure 48. Most of the shorebirds (67%) used the intertidal flats while the intertidal marsh east ranked second in habitat use (19%). However, there were seasonal variations; the intertidal marsh east attracted the highest number of shorebirds in winter (Figure 49).

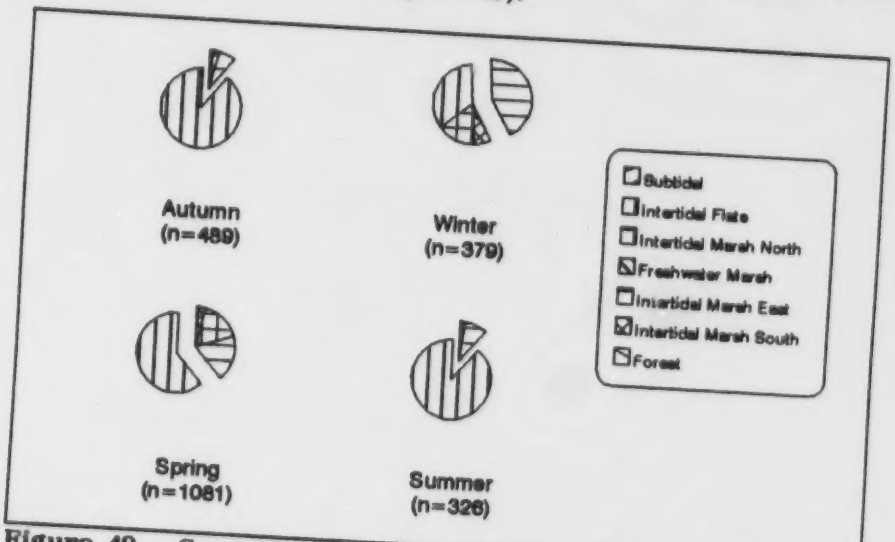


Figure 49. *Seasonal habitat use by shorebirds on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

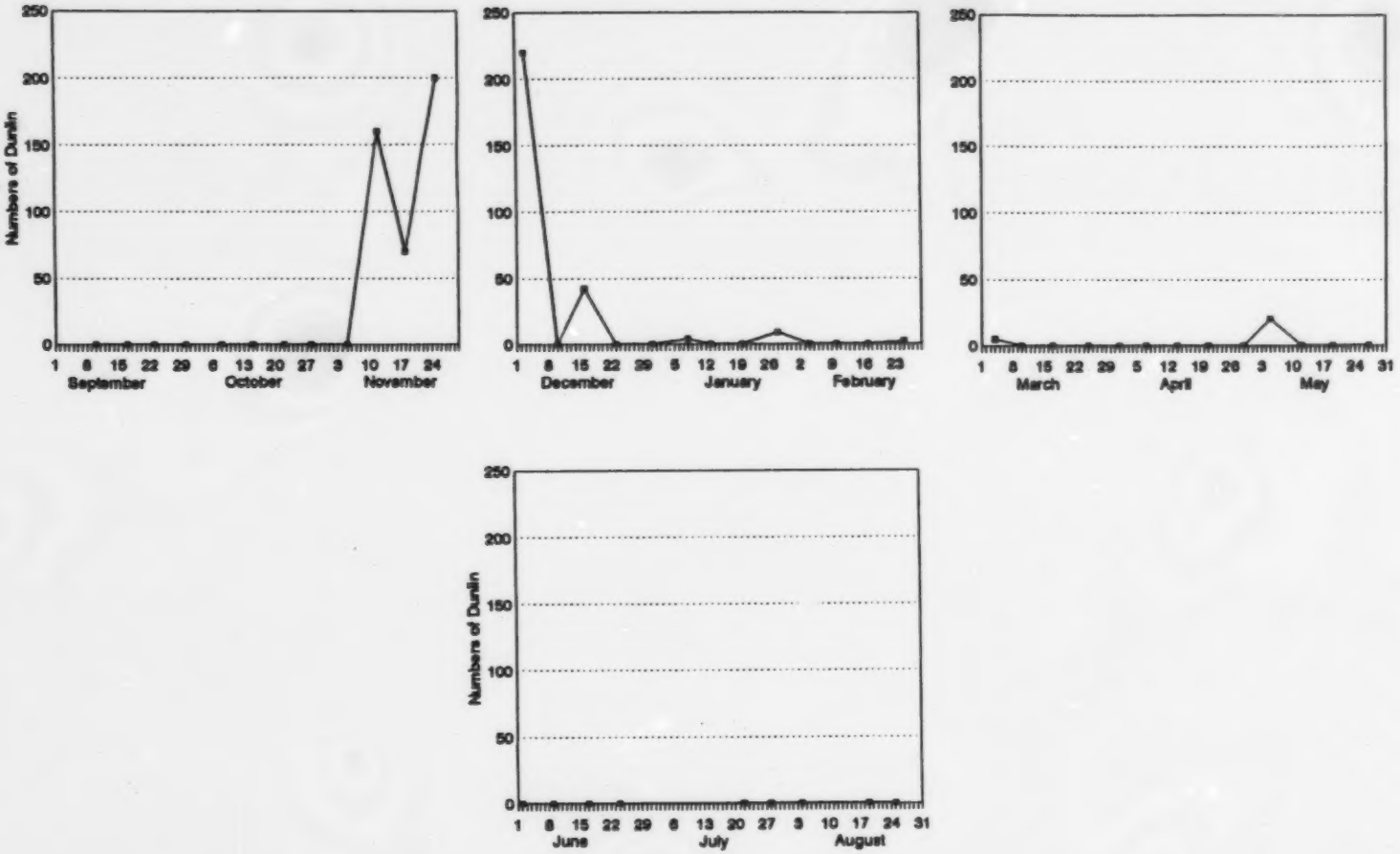


Figure 50. *Seasonal fluctuations in numbers of Dunlin on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

The total number of Dunlin reported was 732 birds, making it the most abundant of the shorebirds (32%). Earliest arrival was 12 November 1990 and latest departure was 5 May 1991. However, the majority of Dunlin were seen during the first 5 weeks of this period (95% were reported from 12 November to 16 December, 1990); a peak of 220 birds occurred on 3 December 1990 (Figure 50). Dunlin frequented the intertidal flats the most (68%), the only habitat used in autumn. A raft was present within the intertidal flats habitat unit where Dunlin were seen resting a number of times. The second most used habitat was the intertidal marsh east (22%) which ranked as the favoured habitat in winter (Figure 51).

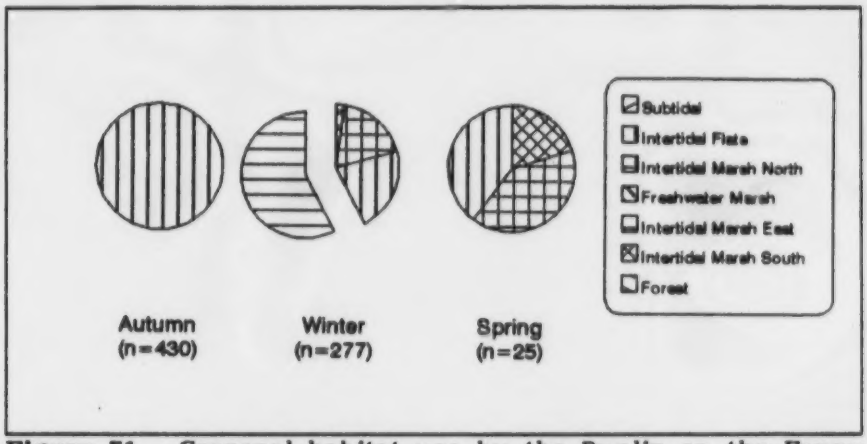


Figure 51. *Seasonal habitat use by the Dunlin on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

A total of 430 Western Sandpipers was identified during the study period making it the second most abundant species. A group of 150 birds was seen on 5 May 1991 on the boundary between the intertidal marsh north habitat unit and the intertidal flats unit near to the intertidal marsh east. A group of 280 birds was seen on 25 August 1991 feeding on the intertidal flats near the outermost edge of the Cowie Creek channel.

A total of 84 Killdeer was tallied. Despite its proportionally low numbers, its frequency of occurrence in every season was the highest of any shorebird (62% over the study period). The Killdeer was seen mostly in spring (37%) when numbers peaked at 10 birds on 4 March 1991. The preferred habitat of this plover was the intertidal marsh south (43%), although the intertidal marsh north (36%) was used most during spring and summer (Figure 52).

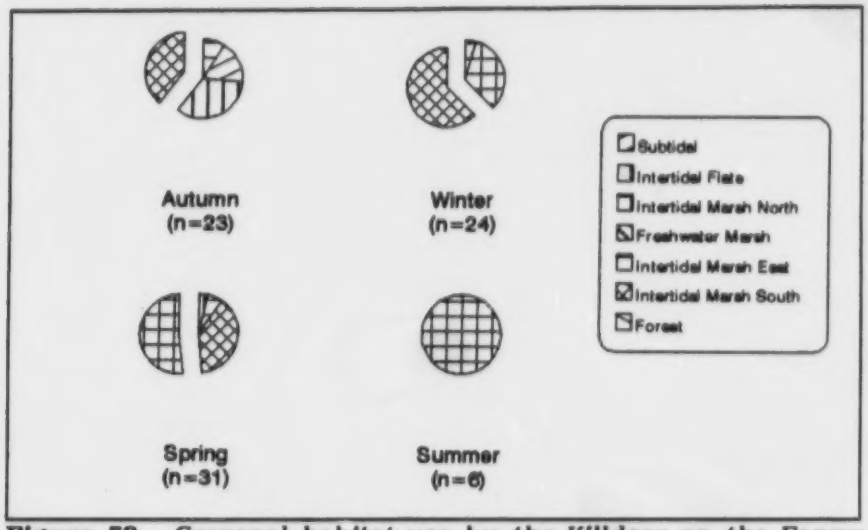


Figure 52. *Seasonal habitat use by the Killdeer on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

The total number of Greater Yellowlegs counted was 24 birds. The earliest arrival was 28 July 1991 when 2 birds were seen using the intertidal flats; the latest departure was 29 April 1991. Only 1 bird was sighted in autumn; it was using the intertidal marsh east. The species was recorded on 4 occasions throughout winter, totalling 8 individuals; the maximum number seen over the study was 4 birds on 10 February 1991. Nevertheless most of the Greater Yellowlegs were seen in spring (13 birds) when 3 migrants were reported in each of 3 surveys on 7, 14, and 29 April 1991. The intertidal marsh south was their preferred habitat (67%), followed by the intertidal flats (21%) and the intertidal marsh east (13%). Eleven birds were identified simply as yellowlegs species (31% of all yellowlegs); all were seen in spring using the intertidal marsh south (73%) or the intertidal marsh north.

We saw a total of 8 Pectoral Sandpipers, all using the intertidal marsh east in autumn: 5 birds were seen on 17 September 1990 feeding near Tozer Road, 1 bird was seen on 23 September 1990 and 2 birds were noted on 8 October 1990.

We saw one Common Snipe on 12 May 1991 in the intertidal marsh east.

Twenty dowitchers were reported as dowitcher species in the autumn of 1990. The earliest arrival was on 10 September, 1990 and the latest departure was 22 October, 1990. Based on the late dates, most were likely Long-billed Dowitchers. The peak number of 6 birds was reported on 23 September 1990 feeding near Tozer Road. Most (90%) of the dowitchers were seen in the intertidal marsh east; the remainder used the intertidal marsh south.

Gulls and Terns: Four species of gulls were recorded in the Fanny Bay wetlands; the total gulls seen was 1542 birds (6% of all birds). Of the gulls identified, the Mew Gull and Bonaparte's Gull were the most abundant; the Glaucous-winged Gull and Ring-billed Gull were also present. The largest proportion of gulls (42%) was reported simply as gull species. Seasonal fluctuations in the numbers of gulls is shown in Figure 53. From a peak of 127 birds on 10 September 1990, numbers declined through autumn (26% of the total) and remained relatively low through winter (19% of the total). The highest seasonal total was in spring (38%) when another peak of 97 birds was reached on 3 March 1991. Counts through June and July were the lowest (18% of all gulls) but they built steadily as fall approached. Data from outside the study period show gull numbers were elevated again in early autumn of 1991: 131 birds on 1 September. All habitats were used by gulls; the proportional amount of use changed with the seasons (Figure 54). The intertidal flats was used most overall (55%) followed by the intertidal marsh north. Major concentrations of gulls are shown in Figure 57.

Of the identified gulls, the Mew Gull was the most abundant with 559 birds seen (36% of all gulls). A peak number of 56 birds was recorded on 5 May 1991; seasonal fluctuations in Mew Gull numbers is shown in Figure 53. The proportion of seasonal use these gulls seen in spring (32%), summer (31%) and autumn (35%) were similar. The preferred habitat of the Mew Gull was the intertidal flats in every season (73% over the study period) but the intertidal marsh north was used almost as much in spring (Figure 55).

The Bonaparte's Gull ranked second in abundance of the gulls, with a total of 298 birds (19% of all gulls). Their numbers increased on 14 April 1991 during spring migration and continued through to their departure on 12 May 1991 (Figure 53). Birds reappeared on 24 June 1991, likely nonbreeders, and the autumn movement became obvious from the end of July to the end of the study period in August 1991. In the previous year, their numbers peaked at 87 birds on 10 September 1990 and declined through to 8 October 1990. More birds were seen in autumn (62% of the total) than in spring (13%). Habitat use by Bonaparte's Gull occurred mostly in the intertidal flats (62% over the study period) with the subtidal area ranking second overall; in spring the intertidal marsh south was favoured (71% of the birds seen in spring; Figure 56).

We identified a total of 29 Glaucous-winged Gulls over the study period. Although this species is described by Campbell et al. (1990) as *the* "sea gull" of the coast found in all coastal habitats at all seasons, it was recorded in the Fanny Bay wetlands only in small numbers sporadically and not at all in summer. Most of the birds (72%) were seen in the 4 months from September to December, 1990. It is likely that many of the "gull species" recorded over the study were the Glaucous-winged Gull. The habitat used most by this species was the intertidal flats (34%) followed closely by the intertidal marsh north (28%); however, the forest unit was used most in winter.

A total of 6 Ring-billed Gulls was reported: 2 birds on 8 October 1990, 1 bird each on 10 December 1990 and 10 February 1991 and 1 bird each on 4 August 1991 and 25 August 1991. The birds in summer and winter were seen in the intertidal flats; those in autumn were seen in the intertidal marsh north.

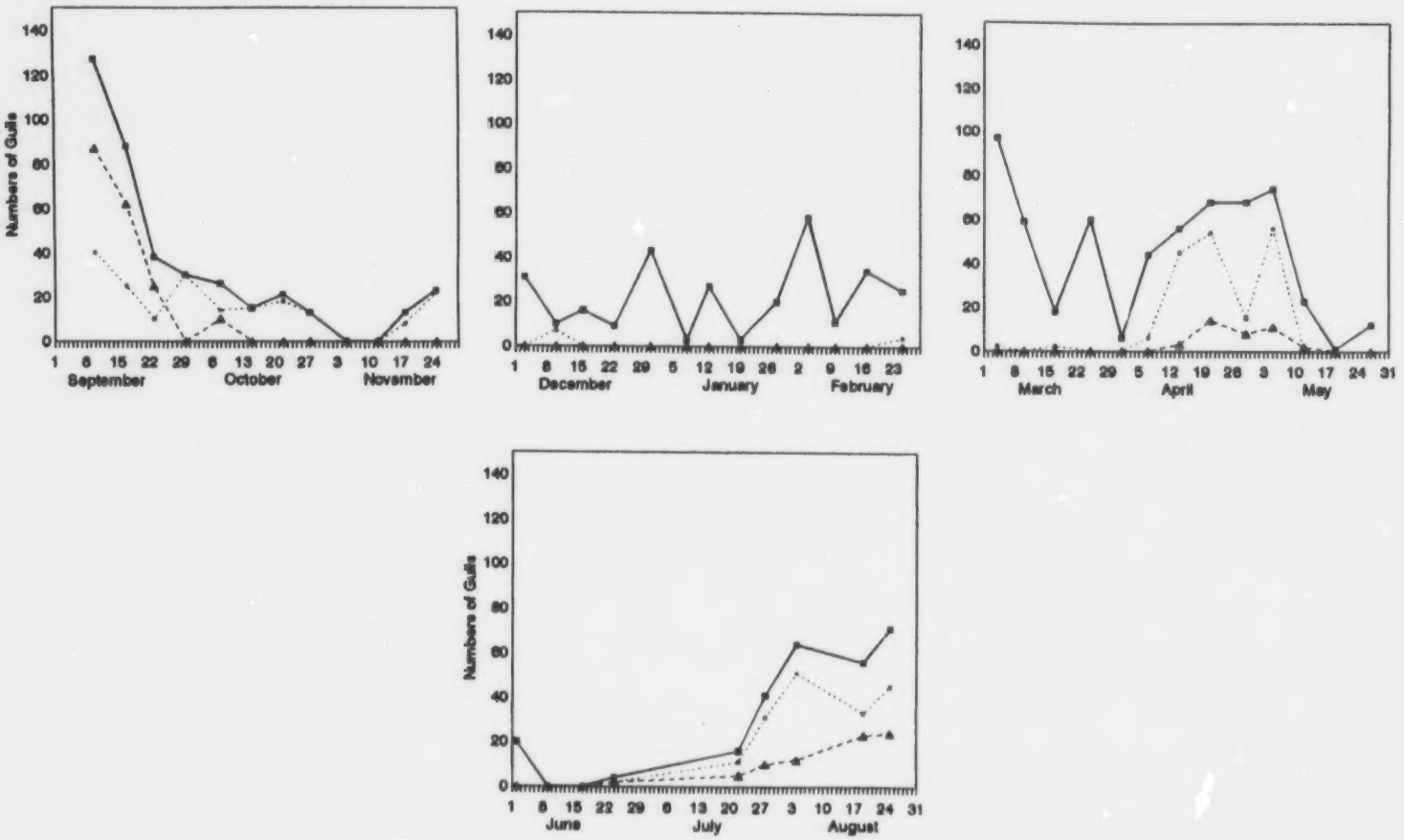


Figure 53. *Seasonal fluctuations in numbers of the Mew Gull (dotted line), Bonaparte's Gull (dashed line) and all gulls (solid line) on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

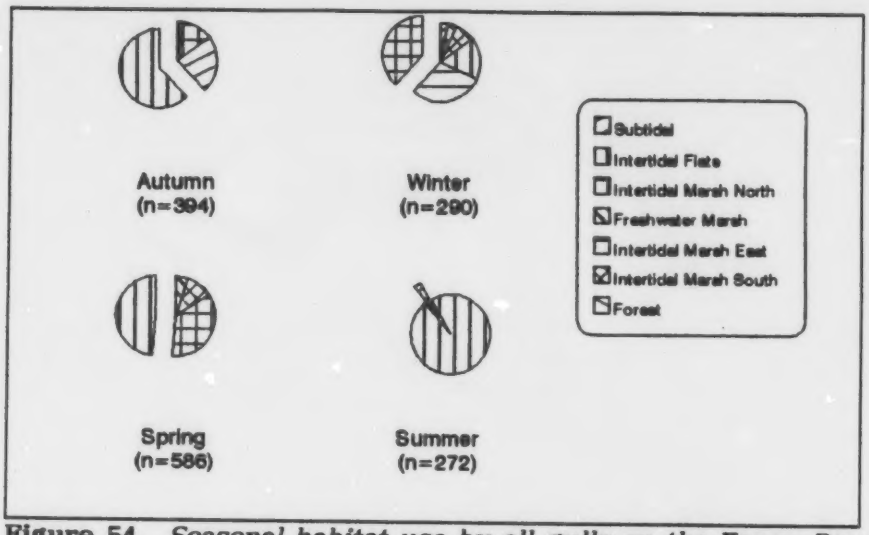


Figure 54. *Seasonal habitat use by all gulls on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

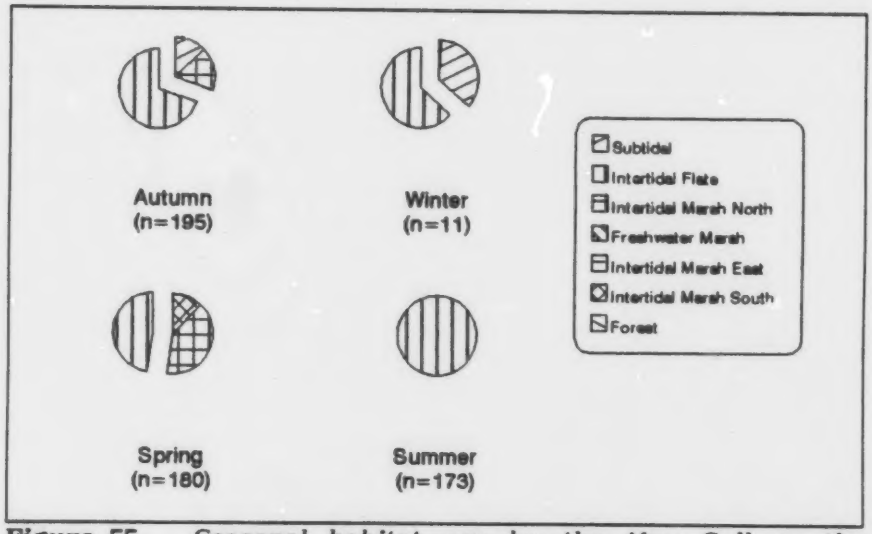


Figure 55. *Seasonal habitat use by the Mew Gull on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

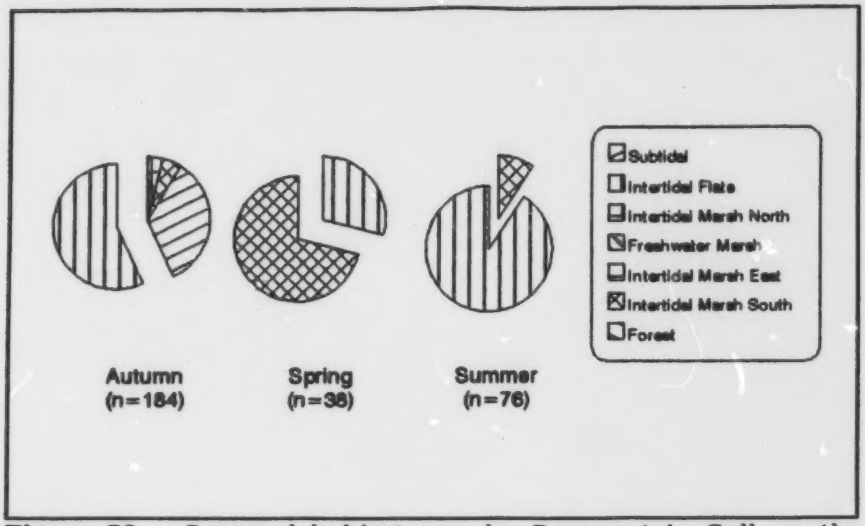


Figure 56. *Seasonal habitat use by Bonaparte's Gull on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

The gull family (*Laridae*) was also represented by 2 species of terns recorded during the study period. Their numbers are not included with the gull totals.

A group of 30 Common Terns was seen on 17 September 1990 in the subtidal habitat unit near the shore on the northern side of the study area (Figure 57).

An individual Caspian Tern was seen on 24 June 1991 in the intertidal marsh east.

Alcids: Two species of alcids were recorded. We saw a total of 4 Pigeon Guillemots: 1 bird on 17 September 1990, 1 bird on 1 April 1991 and 2 birds on 17 June 1991. The bird in autumn was in the subtidal habitat unit and the other 3 were in the intertidal flats area. Although the Pigeon Guillemot is present along the coast throughout the year, this species is mostly reported from April through September when it can be locally numerous (Campbell et al. 1990)

Two Marbled Murrelets were seen on 29 April 1991 using the intertidal flats habitat unit.

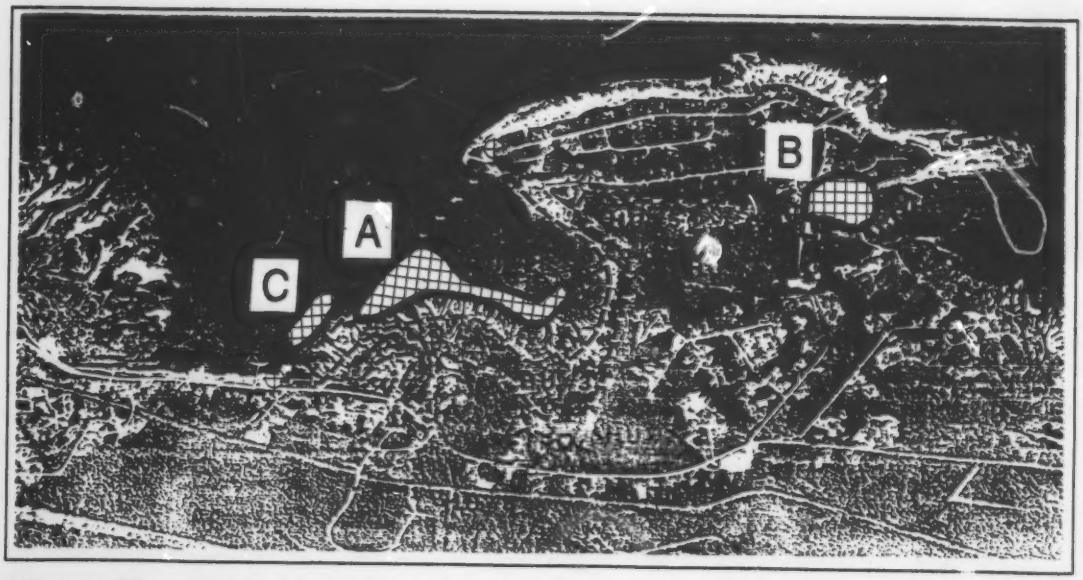


Figure 57. *Major concentrations of gulls and terns on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991, shown as proportions of the total number of birds of each species. Mew Gull: A-20% Bonaparte's Gull: A-22% B-11% C-13% Common Tern: C-100%.*

Doves and Pigeons: Twelve Rock Doves were seen on 16 December 1990 in the forest habitat unit.

A total of 8 Band-tailed Pigeons was seen: 1 bird on 29 April 1991 in the forest habitat unit; 1 bird on 2 June 1991 in the forest; 1 bird each on 9 June and 24 June, 1991 in the intertidal marsh north; and 4 birds on 25 August 1991 using the intertidal marsh east.

Owls: An individual Short-eared Owl was recorded on 12 November 1990 in the intertidal marsh north habitat.

Hummingbirds: We saw a total of 35 hummingbirds during the study period. The Rufous Hummingbird accounted for 20 of these sightings and the remainder were reported simply as hummingbird species. The earliest arrival of the Rufous Hummingbird was 1 April 1991 and the latest departure was 17 September 1990; most of the birds were seen in summer. All of the hummingbirds occurred in the forest habitat except for 2 observed in the intertidal marsh east and 1 in the intertidal marsh south.

Kingfishers: We saw a total of 66 Belted Kingfishers. This species is a resident; it was present in every season with a 70% frequency of occurrence overall. The numbers of birds observed in each season remained relatively constant except in summer when they were higher (38% of the all kingfishers). However, the peak of 6 birds was recorded on 22 October 1990. Every habitat

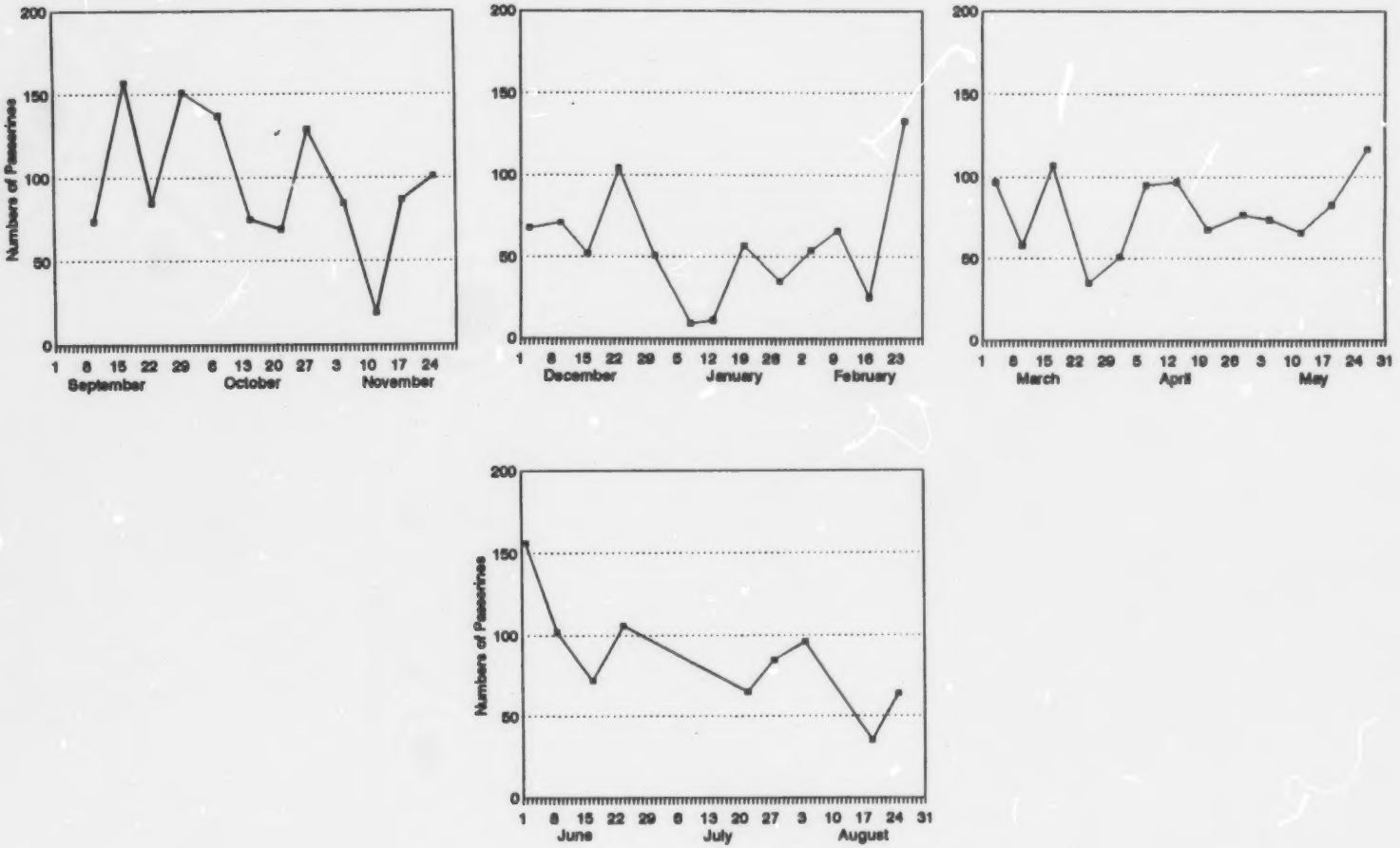


Figure 58. *Seasonal fluctuations in numbers of passerines on the Fanny Bay - Little Bay wetlands, September 1990 through August 1991.*

was used by the Belted Kingfisher except the subtidal area. The preferred habitat was the intertidal marsh north (47%) but in autumn the forest was used the most.

Woodpeckers: Five species were recorded in this group with a combined total of 59 birds including 5 individuals that were reported simply as woodpecker species.

The Northern Flicker, with a total of 38 birds, accounted for the majority of the woodpeckers seen (70%). This species was noted in every season but most of the birds occurred in the autumn (61%) when numbers peaked at 9 birds on 30 September 1990. The preferred habitat of the Northern Flicker was the forest (42%) where the numbers remained relatively constant throughout the study period. The increased numbers recorded in autumn matched the increased use of the intertidal marsh east (8 flickers, all on 30 September 1990) and the intertidal marsh south (7 flickers) in that season.

Six Pileated Woodpeckers were tallied over the study period, 1 bird each on the following days: 17 September 1990, 10 December 1990, 1 April 1991, 21 April 1991, 19 May 1991 and 24 June 1991. Most of them were seen using the forest but the intertidal marsh south and the freshwater marsh areas were also used.

The Hairy Woodpecker was seen a total of 6 times, one bird each: 23 September 1990, 30 September 1990, 8 October 1990, 18 November 1990, 17 February 1991 and 25 August 1991. All were seen in the forest except 1 bird noted in the freshwater marsh habitat unit in the summer.

We saw 3 Red-breasted Sapsuckers: 1 on 17 September 1990 in the forest and 2 on 23 December 1990 in the freshwater marsh habitat unit.

One Downy Woodpecker was seen on 8 October 1990 in the forest.

Passerines: Although portions of the forested sections in the Fanny Bay Wetlands area were surveyed, the focus of the study was primarily to determine water bird use, so passerine information is limited. Furthermore, fewer surveys were done in summer and the surveys were sometimes less complete than in other seasons; passerine counts were affected by this, more so than some of the other groups. Therefore over the course on the study, recorded numbers of songbirds were lower than would otherwise be expected, with many of the family groups scantily represented or missing entirely from the species list (especially the flycatchers, vireos and warblers). Unlike the Englishman River estuary study (Dawe et al. 1994), there were few other sources from which to draw passerine data; additional studies would help to complete the picture of passerine use in this area.

Nevertheless, 16 families of 55 species and 3711 birds were tallied (14% of all the birds seen during the study) which ranks the passerines as second only to waterfowl in abundance. In summer, the passerines were the most abundant group (Figure 5). The numbers of passerines fluctuated with the seasons, as shown in Figure 58. If the totals seen in each season are adjusted to account for the different numbers of surveys, then the abundance in autumn was the highest

with summer and spring ranked close behind. Thus only in winter was there significantly lower numbers of passerines present (20% of the passerine birds actually seen). Over the study period, the habitat used most by passerines was the forest followed by the intertidal marsh east. For seasonal changes in habitat use refer to Figure 59.

The largest number of songbirds that was seen in the intertidal marsh east was reported on 28 October 1990. This might have represented a chance encounter with a mixed-species flock. However the unusual numbers of Bushtits (18) and Golden-crowned Kinglets (6) occurring outside of the forest plus the presence of 16 Dark-eyed Juncos and 50 European Starlings in the same marsh on that day suggests that the birds might have been exploiting a time-limited resource such as an arthropod emergence or some wetland plant seeds. In summary, a number of passerines increased their use of the intertidal marshes in autumn and winter.

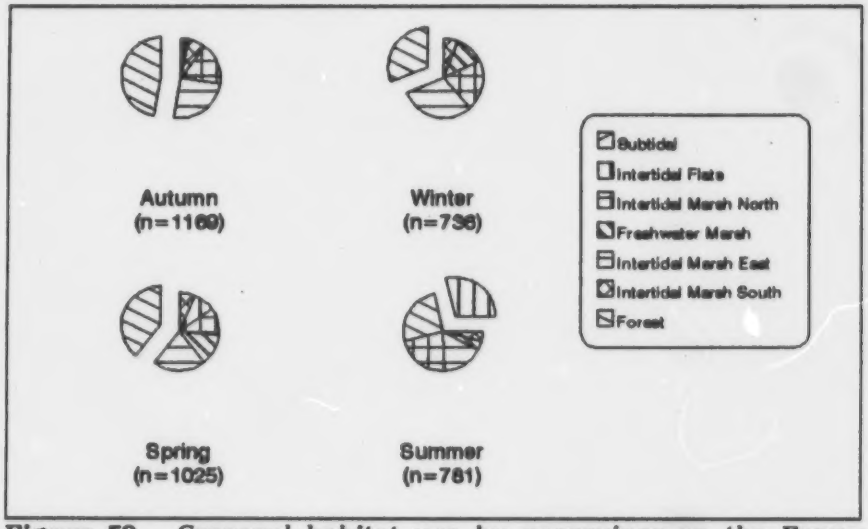


Figure 59. *Seasonal habitat use by passerines on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

Flycatchers: Three species of flycatchers were recorded with a combined total of 16 birds including 3 individuals that were recorded simply as flycatcher species. All flycatchers were seen in the forest.

The Pacific Slope Flycatcher was the most abundant with a total of 7 birds seen (44% of flycatchers). Their presence in the study area was short but almost continuous from the earliest arrival on 5 May 1991 to the latest report on 17 June 1991. The maximum number of birds seen was 2.

Three Willow Flycatchers were counted in the study period: 1 bird on 9 June 1991 and 2 birds on 24 June 1991.

The Hammond's Flycatcher was seen 3 times: 1 bird each on 3 consecutive weeks during approximately the same short period that the other 2 species of flycatchers were present. The earliest arrival was on 27 May 1991 and the latest report was on 9 June 1991.

Swallows: The swallows were only represented by 3 species during the survey with a combined total of 121 birds. Thirty eight of these individuals (31%) were recorded simply as swallow species.

The Violet-green was the most abundant of the swallows identified (47 bird; 39% of all swallows). The earliest arrival was 7 April 1991 and the latest departure was 28 July 1991. During this period the frequency of occurrence was 86%. In contrast with the Barn Swallow, the Violet-green Swallow was seen mostly in the spring (85%) when the peak number of 8 birds was recorded on 12 May 1991. Birds were reported mainly over the intertidal marsh east (55%) with the freshwater marsh and the intertidal marsh south sharing a distant second ranking at 17%.

The Barn Swallow was the second most abundant swallow with 35 birds accounting for 29% of all swallows. The earliest arrival was 21 April 1991 and the latest departure was 4 August 1991; the presence of the Barn Swallow began and ended later in the season than the did that of the Violet-green. The frequency of occurrence of the Barn Swallow was 85% during its stay. Numbers were highest in summer (74%); the peak number was 13 birds recorded on 4 August 1991, just before their departure. The preferred habitat of the Barn Swallow was over the intertidal marsh east (74% over the study period) but 6 of the 9 birds seen in spring were seen over the freshwater marsh habitat unit.

One Tree Swallow was seen on 2 June 1991 over the intertidal marsh east.

Crows and Jays: Three species of corvids with a combined total of 898 birds accounted for 24% of the passerine total, ranking them as the most abundant passerine family. The Northwestern Crow was seen in the highest numbers (818 birds; 91% of the corvid total). Crows were present in every season with the highest numbers recorded during the summer (37%); the peak of 58 crows was seen on 28 July 1991. The frequency of occurrence was 81% during the study period. The intertidal flats was generally used most by the Northwestern Crow (42%); however, no crows at all were seen in this habitat unit during the winter. The intertidal marsh north ranked as the second most used habitat (25%) followed by the forest and the intertidal marshes east and south; the freshwater marsh was used but little.

Seventy Steller's Jays were observed in total; records occurred in every season except summer. Most of the birds were seen in autumn (60%) when a peak of 10 jays was counted on 8 October 1990. The favoured habitat of the Steller's Jay was the forest (76%) followed by the freshwater marsh (16%).

A total of 10 Common Ravens was seen. Sightings were sporadic; ravens were present for only 1 week or 2 consecutive weeks in each season. The maximum number of 4 ravens was recorded on 25 August 1991 in the intertidal marsh north. The forest (5 birds counted over 2 seasons) ranked highest in habitat use overall.

Chickadees: The total Chestnut-backed Chickadees observed over the study period was 113 birds. It was seen in every season but the numbers and the frequency of occurrence varied. Spring had the highest total (42% of all chickadees) but the frequency of occurrence was higher in autumn (83%) and summer (78%). Only 13 birds were seen in winter (12% of the total). The most birds seen in a single day was 8 on 15 October 1990. All chickadees were reported from the forest habitat except 3 that were seen using the intertidal marshes east or south.

Bushtits: A total of 71 Bushtits was seen; 56% were tallied in autumn and 35% in summer. Bushtits were not reported in winter although the species is considered a resident over all of its range. The frequency of occurrence was low (below 34% in every season) but because of their flocking behaviour, the numbers seen on a single day were usually 8 birds or higher. The peak of 18 birds, recorded on 28 October 1990, was feeding in the intertidal marsh east, along with the other passerines as noted above. Other than that 1 report, all of the Bushtits were seen using the forest habitat unit.

Nuthatches: The numbers of the Red-breasted Nuthatch totalled 20 birds. The 5 reports that occurred in autumn account for most of the birds seen (70%); the remainder occurred in winter (4 days with 1 bird each) and spring (2 birds on the same day). Nuthatches preferred the forest (85%) but the intertidal marshes south and east were also used.

Creepers: One Brown Creeper was seen on 4 August 1991 in the forest.

Wrens: Four species of wrens totalling 75 birds were reported during the study period.

We saw a total of 52 Winter Wrens (69% of all wrens). Although the species, a year-round resident, was recorded in every season, the majority occurred in autumn (65%) and winter (29%); only 2 birds were seen in spring and 1 in summer. Thus the frequency of occurrence ranged from 100% in autumn and 54% in winter to 11% in summer. A maximum number of 5 birds in one day was seen on 4 occasions. The forest was the favoured habitat of the Winter Wren (85%) followed by the intertidal marshes east and north and the freshwater marsh.

The Bewick's Wren, with a total of 20 birds, was the second most abundant wren. It was seen intermittently all year round; the highest seasonal total was 7 birds in spring and the lowest was 2 birds recorded in winter. There was never more than 2 individuals counted in a day. The most frequented habitat was the forest (85%) followed by the intertidal marsh east and the freshwater marsh.

Two Marsh Wrens were recorded on 7 April 1991 in the forest habitat unit.

The House Wren was seen once; 1 bird was recorded on 5 November 1990 in the intertidal marsh east.

Dippers: We saw a total of 5 American Dippers: 1 bird on 18 November 1990 in the forest, 1 bird on 25 November 1990 in the forest, 2 birds also on 25 November 1990 using the intertidal marsh north and 1 bird on 31 December 1990 in the forest.

Kinglets and Thrushes: The muscicapid family was represented by 5 species with a cumulative total of 465 birds (13% of all passerines). The American Robin was the most abundant member of the group (61%). Records from throughout the study period total 282 robins. Highest numbers were seen in spring (58% of all robins) when the peak of 25 birds occurred on 4 March 1991; the seasonal total for autumn ranked second (35%). The American Robin used a diversity of habitats in every season; the forest was used most (59%) followed by the intertidal marshes east, north and south. Use of the freshwater marsh was also significant, especially in spring when the birds spent slightly less time in the forest and more time in all the other habitats used.

The Golden-crowned Kinglet was the second most abundant muscicapid, with a total of 120 birds seen. This species appears to be a winter resident on this site; its earliest arrival was 23 September 1990 and latest departure was 12 May 1991. Most of the birds were seen in autumn (56%) when the peak number of 20 individuals was recorded on 5 November 1990. The remainder of the birds were seen in winter (28%) and spring (16%). Only the forest habitat was used by the Golden-crowned Kinglet except for 1 report of 6 birds in the intertidal marsh east on 28 October 1990. This coincides with the only report of the Bushtit in this habitat unit; the 2 species often flock together but the records do not indicate whether this was the case on this occasion.

We saw a total of 21 Ruby-crowned Kinglets: 11 birds in spring (52%), 8 birds in autumn and 2 birds in winter. Although it is known to breed on Vancouver Island (Campbell et al. In prep.), this species was not reported from the study area during the summer. The earliest arrival was 17 September 1990 and the latest departure was 29 April 1991. Most of the birds were seen in the forest (76%); the remainder occurred in the intertidal marsh east habitat unit.

We saw a total of 21 Varied Thrushes. The earliest arrival was 8 October 1990 and the latest departure was 7 April 1991. Most of the birds were seen in spring (62%) with a maximum of 4 on 17 March 1991 and again on 7 April 1991. This species preferred the forest. One bird was seen using the intertidal marsh north.

The numbers of the Swainson's Thrush also totalled 21 birds. This secretive bird is commonly heard calling from the forest edge. The earliest arrival was 27 May 1991 and the latest departure was 22 July 1991. As a result, most of the birds were seen in summer (95%) when the peak number of 8 was recorded on 17 June 1991. The forest was the only habitat used by the Swainson's Thrush.

Waxwings: Two species of waxwings were reported. The most abundant was the Cedar Waxwing with a total of 74 birds seen during autumn 1990 (92%) and summer 1991 (8%). The earliest arrival was 4 August 1991. The latest departure was on 17 September 1990 when a peak of 60 were observed feeding on that date. The forest was the most used habitat; the intertidal marsh north was also used (3 birds).

One Bohemian Waxwing was recorded on 4 March 1991 in the forest.

Shrikes: The Northern Shrike was seen 3 times over the study period: 1 bird on 15 October 1990 in the intertidal marsh east, 1 bird on 12 November 1990 in the intertidal marsh north and 1 bird on 10 December 1990 also in the intertidal marsh north.

Starlings: The gregarious European Starling was the second most abundant passerine species with 592 birds seen, 16% of the passerine total. Flocks of starlings could be seen at any time of the year in the Fanny Bay - Little Bay wetlands; the numbers remained relatively constant over time with only a slight decrease in winter. Their frequency of occurrence ranged from 33% in summer to 69% in spring. A peak of 80 birds was recorded on 2 June 1991. Starlings were seen mostly in the intertidal marshes: east (48%), north (36%) and south (7%). The remainder of the birds were seen in the freshwater marsh and the forest.

Vireos: Four species of vireos were recorded in the study period; none of them was seen in great numbers. We have 4 records of the Warbling Vireo: 1 bird was seen on 19 May 1991; 2 birds on 9 June 1991, 2 birds on 17 June 1991 and 2 birds on 24 June 1991. All 7 were seen in the forest.

The Solitary Vireo was recorded 5 times, 1 bird each from 5 May 1991 to 17 June 1991, all were seen in the forest. In addition, there was 1 Solitary Vireo seen on 10 September 1990 in the intertidal marsh south habitat unit.

The Hutton's Vireo was recorded 4 times, 1 bird each: 17 September 1990, 23 September 1990, 10 February 1991 and 5 May 1991. All 4 birds were seen in the forest.

We had 3 records for the Red-eyed Vireo: 1 bird on 17 June 1991 in the forest, 1 bird on 24 June 1991 in the forest and 1 bird on 24 June 1991 in the freshwater marsh habitat unit.

Wood Warblers, Sparrows and Blackbirds: The emberizids are a large and diverse group that ranked as the most abundant passerine family with a total of 983 birds (26% of all passerines). Eight species of warblers, 7 species of sparrows and 3 species of blackbirds were all recorded over the study as well as 13 emberizids that were not identified to species. The sparrows were by far the most abundant of the sub-groups in this family.

Warblers: The total number of Orange-crowned Warblers seen was 40 birds. The earliest arrival was 7 April 1991 and the latest departure was 24 June 1991; during this period the frequency of occurrence was 92%. An

isolated individual was seen on 10 September 1990. Their numbers were highest in summer when 73% of the Orange-crowned Warblers were seen; a peak of 8 birds was recorded on 5 May 1991. All of the birds were seen in the forest except for 2 birds observed in the intertidal marsh east and 1, the isolated autumn record, in the intertidal marsh south.

The Black-throated Gray Warbler was the second most abundant warbler with a total of 14 birds seen. From the earliest arrival on 21 April 1991, the species was seen on every survey until 27 May 1991. The only individual seen outside of this period was a report on 24 June 1991. A maximum of 3 birds was seen on 3 occasions. The only habitat used by this warbler was the forest.

We recorded 10 Yellow Warblers in total. From the earliest arrival on 2 May 1991 to the latest departure on 24 June 1991 they were continuously present. The most birds seen in one day was 3. All of the birds were seen in the forest except one that was reported from the intertidal marsh east on 2 June 1991.

We also saw a total of 10 Common Yellowthroats. From the earliest arrival on 21 April 1991 to the latest departure on 10 September 1990, the frequency of occurrence was 56%. The maximum number seen in one day was 2. Habitat use by the Common Yellowthroat was more diverse than other warblers; the freshwater marsh was preferred (7 birds) but the intertidal marshes east and south were also used.

One MacGillivray's Warbler was noted each week from the earliest arrival of this species on 5 May 1991 to its latest departure on 9 June 1991; all 6 birds were seen in the forest.

One Yellow-rumped Warbler was recorded in each of 4 sightings: 21 April 1991 in the forest, 5 May 1991 in the forest, 9 June 1991 in the intertidal marsh east, 23 September 1990 in the forest.

We saw 2 Townsend's Warblers on 12 May 1991 in the forest.

The Wilson's Warbler was seen once; 1 bird on 19 May 1991 was feeding in the forest.

Sparrows: The Dark-eyed Junco was the most abundant sparrow with a total of 325 birds seen. The earliest arrival was 30 September 1990 and the latest departure was 17 April 1991. During this period the frequency of occurrence was 84%. The junco numbers remained relatively constant through autumn (45%) and winter (50%); a peak of 40 birds was recorded on 18 November 1990. Habitat use was diverse but relatively constant through the seasons; the forest was favoured most and the intertidal marsh north ranked second followed by the intertidal marsh east, the intertidal marsh south and the freshwater marsh. The only exception was from 28 October to 25 November when a total of 47 Dark-eyed Juncos were seen in the intertidal marsh east; at least 41 of them were feeding (Figure 60). As a result, the use by juncos of the intertidal marsh east habitat ranked almost as high as the forest in autumn.

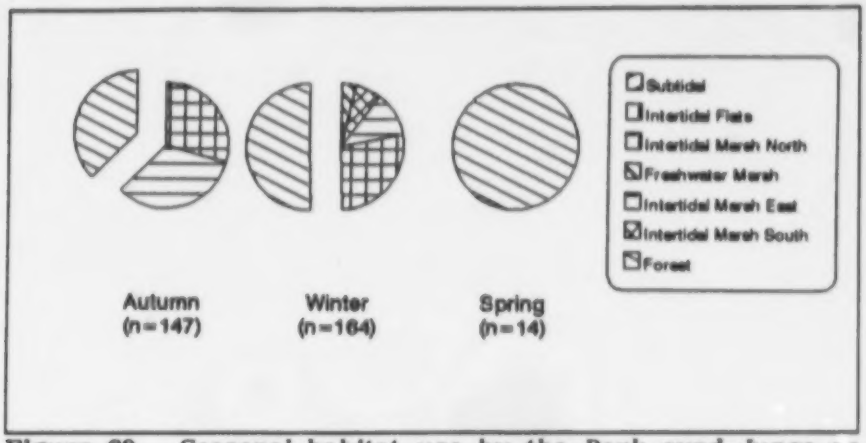


Figure 60. *Seasonal habitat use by the Dark-eyed Junco on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

The Song Sparrow, with a total of 207 birds, was the second most abundant sparrow observed over the study period. The seasonal total for this resident was highest in autumn (35%) and lowest in summer (11%). A peak number of 12 birds was seen on 7 April 1991. The Song Sparrow used all of the marsh and forest habitats, preferring the forest (39% of the birds) over the study period. In autumn and winter the use of the intertidal marshes increased dramatically, especially the intertidal marsh east (Figure 61).

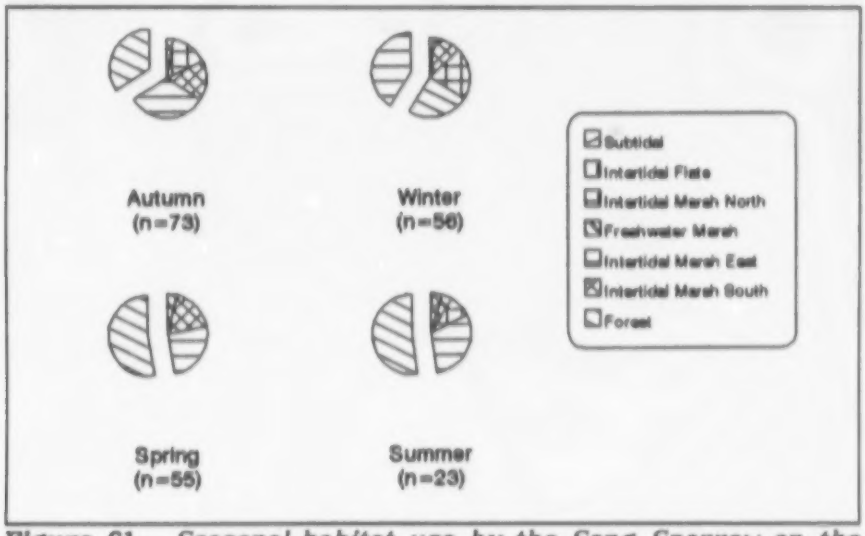


Figure 61. *Seasonal habitat use by the Song Sparrow on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

The Rufous-sided Towhee was the third most abundant sparrow with a total of 94 birds seen. Although this species is a resident, the numbers seen varied with the season; half of the birds were seen in autumn and only 9% of the total were tallied in summer as many of the wintering birds dispersed to their breeding areas. A peak of 10 birds was recorded on 5 November 1990. Over the study period, the forest habitat was favoured (66%); in summer it was the only habitat used. Much activity shifted to the intertidal marsh east in autumn and to the intertidal marsh north in winter (Figure 62).

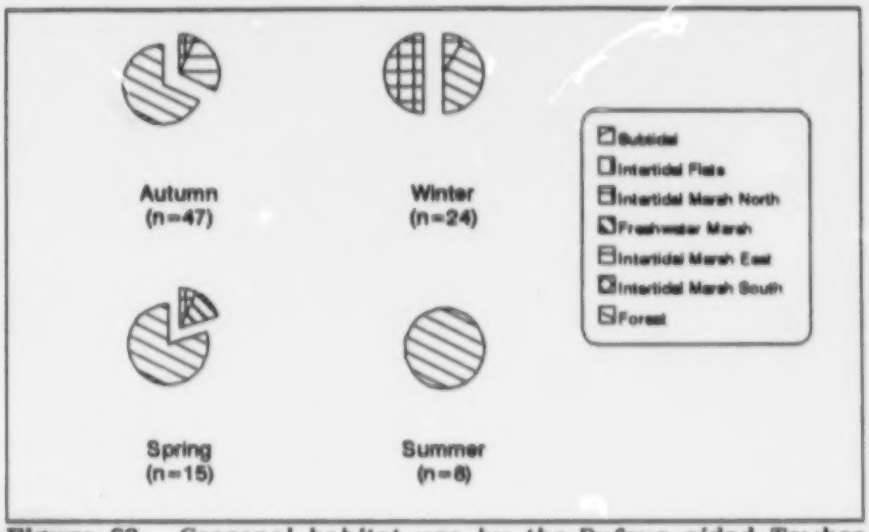


Figure 62. *Seasonal habitat use by the Rufous-sided Towhee on the Fanny Bay - Little Bay wetlands, autumn (1990) through summer (1991).*

We saw a total of 73 Savannah Sparrows, almost all of them in the autumn (95%). The remainder occurred in spring. During the autumn migration, the earliest arrival was 10 September 1990 and most birds had left the area by 22 October 1990; a peak of 37 birds was recorded on the 17 September 1990. In the spring, 1 bird was recorded on each of the following days: 7 April, 14 April, 21 April and 5 May, 1991. The habitat used most was the intertidal marsh east (66%) followed by the forest edge, the intertidal marsh south and the intertidal marsh north.

A total of 25 Golden-crowned Sparrows were recorded; seasonal fluctuations were similar to those of the Savannah Sparrow. Most Golden-crowned Sparrows were seen during autumn (92%) from the earliest arrival on 17 September 1990 to the latest departure on 18 November 1990; the remainder of 2 birds were tallied in spring on the 29 April 1991 and the 5 May 1991. A peak number of 8 birds was recorded on 12 November 1990. The preferred habitat of this species was the intertidal marsh east followed by the intertidal marsh north and the forest.

A total of 10 Fox Sparrows was seen. Six sightings of 1 bird each occurred intermittently in autumn, winter and spring. In addition 4 birds were recorded on 27 May 1991. Most of the Fox Sparrows were seen in the intertidal marsh north and the remainder were seen in the intertidal marsh east and the forest.

We have 2 records of the White-crowned Sparrow: 1 bird on 12 November 1990 and 1 bird on 29 April 1991. Both birds were in the intertidal marsh east.

Blackbirds: The most abundant of this group was the Red-winged Blackbird with a total of 135 individuals seen. The species was present in every season but most of the birds occurred in spring (56%). Only 3 individuals were seen in autumn, all on 17 September 1990. There were no sightings after that date until 23 December 1990 when a peak of 21 blackbirds was recorded. As a result, the frequency of occurrence ranged from 8% in autumn to 100% in spring. Most Red-winged Blackbirds were seen in the freshwater marsh (80%) but all the intertidal marsh habitat units and the forest were also used. The forest habitat unit includes at its edge, a small cattail marsh across from Little Bay on Ships Point Road.

We have 4 records of the Brewer's Blackbird: 1 bird on 20 January 1991 in the intertidal marsh south, 1 bird on 21 April in the intertidal marsh east, 1 bird on 29 April 1991 using the intertidal marsh east and one bird on the same date in the intertidal marsh north.

A total of 9 Brown-headed Cowbirds was reported over the study period. Records of single 1 birds occurred on every survey from 12 May 1991 to 24 June 1991; all of these were in the forest. There was also 1 record of 2 cowbirds on 24 June 1991 using the intertidal marsh east.

Finches: Six species of finches were recorded over the study period with a combined total of 227 birds which includes 15 individuals that were identified simply as finch species.

The House Finch was the most abundant of the finches with a total of 72 birds tallied. It was common in spring and summer but was most numerous in autumn (43%) when a peak of 11 birds was recorded on 30 September 1990. All 11 were seen in the intertidal marsh east which was the preferred habitat overall (83%); the intertidal marsh north and the forest were also used.

The American Goldfinch, with a total of 63 birds seen, ranked second in abundance among the finches. Its earliest arrival was 29 April 1991 and the latest departure was 17 September 1990 when the peak number of 12 birds was seen on that day just prior to migration. During this period of stay, the frequency of occurrence was 88%. The American Goldfinch used the intertidal marsh east (40%) and the forest (37%) most; the remainder the time it was seen using the other intertidal marsh habitats and the freshwater marsh.

We saw a total of 35 Purple Finches. The species was seen in every season with highest numbers in spring (57%) when a peak of 7 birds was recorded on 14 April 1991. All but 1 Purple Finch was reported using the forest.

Seven records of the Pine Siskin totalling 21 birds were reported from 1 April 1991 to 2 June 1991. Described as nomadic in fall and winter and an irruptive species by Ehrlich (1988), the Pine Siskin can be unpredictably observed at any time of year. Although the species sometimes forms huge flocks, none were reported over the study period. The peak number was a total of 11 individuals seen on 21 April; 8 of these birds were seen together. The habitat used most by this finch was the forest (86%) followed by the intertidal marshes north and east.

We saw a total of 17 Red Crossbills: 8 birds on 10 September 1990, 6 birds on 20 January 1991, 1 bird on 14 April 1991, 2 birds on 21 April 1991. All were in the forest habitat unit. Sightings of crossbills are variable (Ehrlich 1988) because these birds depend heavily on coniferous cone crop levels.

Four Evening Grosbeaks were recorded on 5 May 1991 in the forest.

Conclusions

Bird Use and Recreational Activities

The Fanny Bay - Little Bay wetlands is an important area for migratory and resident birds over the year. Although this site does not receive the same degree of disturbances noted on the Cluxewe River estuary (see Dawe et. al. 1995), recreational activity must continue to be controlled in order for the area to function at its full potential in terms of supporting numbers of birds.

Non-vehicular access to the site is currently good and significant numbers of people, mostly local pedestrians, bicyclists and equestrians, have used the area as a park for many years. People are often accompanied by dogs which are allowed on the paths if on a leash. At present the impacts of these activities are not considered a serious problem, partly because of the continued efforts of the volunteer property warden who informs the public about nondestructive use.

However, most lands adjacent to the wetlands have been zoned for residential development and predictions by the Comox Strathcona Regional District include substantial population growth in the area. "The greatest threat to coastal wetlands is urban development and the subsequent depletion and degradation of estuarine habitats," stated Clermont (1992) in reference to the Fanny Bay Conservation Unit. If urbanization occurs, it will result in increased recreational use and it might also result in increasing pressure for improved access. Any changes to access should be considered carefully with regard to the impact on bird use.

For example, during the study a short stretch of trail was created by the surveyors regular use of a natural vegetation blind at the edge of the Fanny Bay intertidal mudflats. This path has since been allowed to overgrow to prevent uncontrolled human and animal disturbance of birds using that habitat.

Another example where access is of importance is at the head of Little Bay where a fragile upland plant community adjacent to the intertidal marsh is used regularly for turning and parking vehicles. A low concrete barricade at the edge

of the road's shoulder would allow continued observation of the marsh from that location without destroying the plants or disturbing the birds.

The cattail marsh is currently dense and difficult to view except from the edge of a busy highway. In this case, improved public access to some form of viewing platform coupled with the creation of some open water among the cattails would likely diversify bird use and increase public appreciation of this habitat. By formalizing the areas appropriate for public access, human impact can often be controlled.

Outdoor recreation by an increasingly urbanized population has resulted in complaints about mosquitos breeding in the wetlands and persistent requests for use of insecticides as a means of control. This course of action would have the potential to limit bird use of the wetlands. In recent years, the installation of bird houses to increase the swallow population has been highly successful, but their effectiveness in insect control has not been measured. Public education and discussion of the issue is the most desirable solution.

The surveyors noted that hunting occurred on the western portion of the study area but that this activity was relatively minor, mostly confined to three or four local residents. However, some hunting closures further north had brought a few out-of-town hunters to the area in recent years. The situation needs continued monitoring.

Future Studies

As this survey was primarily concerned with waterbirds, another survey specifically to document songbird use of the Fanny Bay - Little Bay wetlands would round out the picture of migratory and resident bird use of the area.

A baseline survey of human activities within the study area would help create an understanding of the relationship between these activities and the amount of bird use on the wetlands.

Since estuaries and wetlands are dependant on the inflow of water and the presence of a high water table, it would be useful to monitor the streams and springs that dominate the Fanny Bay - Little Bay wetlands. Existing and proposed industrial use of groundwater by the aquaculture industry has the potential to affect groundwater and surface stream flows in the Fanny Bay area (Braybrook et. al. 1995) which in turn would likely have an impact on use by birds, fish and other wildlife.

Literature Cited

Braybrook, C., G. Bryden and A. Dambergs. 1995. Nile Creek to Trent River Water Allocation Plan (draft). B.C. Ministry of Environment Lands and Parks, Regional Water Management, Vancouver Island Region, Nanaimo, B.C.

Blood, D.A., J. Comer, and J. Polson. 1976. Migratory bird use of the Duncan-Cowichan Bay area in 1975. Unpubl. Rept., Can. Wildl. Serv., Delta, B.C.

Butler, R.W. and R.W. Campbell. 1987. The birds of the Fraser River delta: populations, ecology and international significance. Can. Wild. Serv. Occas. Paper No. 65, Ottawa.

Butler, R.W. and R.J. Cannings. 1989. Distribution of birds in the intertidal portion of the Fraser River delta, British Columbia. Technical Report No. 93. Canadian Wildlife Service, Pacific & Yukon Region, British Columbia

Butler, R.W., N.K. Dawe, and D.F C. Trethewey. 1989. The Birds of estuaries and beaches in the Strait of Georgia. *In* Vermeer, K., and R.W. Butler (editors). The ecology and status of marine and shoreline birds in the Strait of Georgia, British Columbia. Spec. Publ. Can. Wildl. Serv. Ottawa.

Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser and M.C.E.McNall. 1990. The Birds of British Columbia. Volume One. Nonpasserines. Introduction, Loons through Waterfowl. Royal British Columbia Museum. Victoria, B.C.

——— 1990. The Birds of British Columbia. Volume Two. Nonpasserines. Diurnal Birds of Prey through Woodpeckers. Royal British Columbia Museum. Victoria, B.C.

——— In preparation. The Birds of British Columbia. Volume Three. Passerines. Flycatchers through Vireos. Royal British Columbia Museum. Victoria, B.C.

Clermont, T.J. 1992. Management Plan: Fanny Bay Conservation Unit. Ministry of Environment, Lands & Parks, Nature Trust of British Columbia and Ducks Unlimited Canada.

Dawe, N.K. 1976. Flora and Fauna of the Marshall-Stevenson Wildlife Area. Canadian Wildlife Service Report. Qualicum Beach, B.C.

——— . 1980. Flora and Fauna of the Qualicum National Wildlife Area, Marshall-Stevenson Unit (Update to 30 June 1979). Canadian Wildlife Service Report, Qualicum Beach, B.C.

——— . 1982. Use of Shoal Harbour Bird Sanctuary by migratory birds. Unpubl. Can. Wildl. Serv. Rept., Qualicum Beach, B.C.

Dawe, N.K. and S.D. Lang. 1980. Ecological inventories of National Wildlife Areas in British Columbia. Flora and fauna of the Nanoose Unit, Qualicum National Wildlife Area. Canadian Wildlife Service, Qualicum Beach, B.C.

Dawe, N.K., T. Martin, T. Barnard and A. Koch. 1995. Bird Use of the Cluxewe River estuary, Vancouver Island, British Columbia, 1990-1991. Technical Report Series No. 209, Canadian Wildlife Service, Pacific and Yukon Region, British Columbia.

Dawe, N.K., T. Martin, and D.E.C. Trethewey. 1994. Bird Use of the Englishman River estuary, Vancouver Island, British Columbia, 1979-1980 and 1988-1989. Technical Report Series No. 208, Canadian Wildlife Service, Pacific and Yukon Region, British Columbia.

Eamer, J. 1985. Winter Habitat for Dabbling Ducks on Southeastern Vancouver Island, British Columbia. MSc Thesis. Department of Zoology, University of British Columbia. Vancouver, B.C.

Ehrlich, P.R., D.S. Dobkin and D. Wheye. 1988. The Birder's Handbook. A Field Guide to the Natural History of North American Birds. Simon & Schuster Inc., New York.

Jungen, J.R. 1985. Soils of Southern Vancouver Island. Report No. 44 B.C. Soil Survey. Ministry of Environment Technical Report 17, Surveys and Resource Mapping Branch, Victoria, B.C. 198 pp

Ricklefs, R.E. 1979. Ecology. Second Edition. Chiron Press, New York.

Trethewey, D.E.C. 1985. Bird Use of the Squamish River estuary. Unpubl. rept., Can. Wildl. Serv., Delta, B.C.

Vermeer, K., R.W. Butler and K.H. Morgan. 1992. The ecology, status, and conservation of marine and shoreline birds on the west coast of Vancouver Island. Occasional paper, number 75, Canadian Wildlife Service. Ottawa.

Appendices

Appendix I. *List of surveyors and their initials, survey dates, and sundry remarks for the Fanny Bay - Little Bay wetlands.*

Surveyors	Initials
Chris Cook	CC
Neil Fidler	NF
Pam Fidler	PF
Grace Solly	GS
Dianna Sparrow	DS

Remarks - Autumn 1990	
12 November CC et al.	160 DUNL are using a raft anchored in the bay - as are most CORM on a separarate raft.
18 November CC et al.	70 DUNL are using a raft, approx center H.U.#2

Remarks - Winter 1990-1991	
3 December CC	Due to weather conditions, poor visibility some areas ommitted
16 December CC et al.	Two hunters at mouth of Tweedie Cr. flushed most fowl from H.U.#3 and #2 to either H.U.#1 or #5; Hunters took 1 AMWI from H.U.#3 during count.
23 December CC et al.	Many areas of H.U.#5 open water are frozen, limiting bird activity.
8 January CC	Due to weather and road conditions this count was not completed; heavy snow
13 January	3 hunters at H.U.#3
4 February	Wind and flood has limited areas covered #7 omitted
4 March	Due to snow some viewing stations missed H.U.#7
17 March	Across from Little Bay on Ships Pt. Rd is a small cattail marsh on the edge of H.U.#7 re: 2 RWBL (f)

Remarks - Spring 1991	
April 14 CC	2 pr. CAGO probably nesting H.U.#3 near fence line; pair wood duck seen at cattail marsh H.U.#4 one seen on pond with loafing logs + boxes
12 May	+10# goslings

Remarks - Summer 1991	
24 June	The counts after June 24 to July 22/91 were not conducted or incomplete due to lack of staff.

Appendix II. *Fanny Bay - Little Bay wetlands bird check-list.*

Species Code	Species Name	Scientific Name
PALO	Pacific Loon	*Gavia pacifica*
COLO	Common Loon	*Gavia immer*
PBGR	Pied-billed Grebe	*Podilymbus podiceps*
HOGR	Horned Grebe	*Podiceps auritus*
RNGR	Red-necked Grebe	*Podiceps grisegena*
WEGR	Western Grebe	*Aechmophorus occidentalis*
DCCO	Double-crested Cormorant	*Phalacrocorax auritus*
BRCO	Brandt's Cormorant	*Phalacrocorax penicillatus*
PECO	Pelagic Cormorant	*Phalacrocorax pelagicus*
GBHE	Great Blue Heron	*Ardea herodias*
GRHE	Green-backed Heron	*Butorides striatus*
TRUS	Trumpeter Swan	*Cygnus buccinator*
CAGO	Canada Goose	*Branta canadensis*
WODU	Wood Duck	*Aix sponsa*
GWTE	Green-winged Teal	*Anas crecca*
MALL	Mallard	*Anas platyrhyncos*
NOPI	Northern Pintail	*Anas acuta*
BWTE	Blue-winged Teal	*Anas discors*
NOSL	Northern Shoveler	*Anas clypeata*
GADW	Gadwall	*Anas strepera*
EUWI	Eurasian Wigeon	*Anas penelope*
AMWI	American Wigeon	*Anas americana*
GRSC	Greater Scaup	*Aythya marila*
HADU	Harlequin Duck	*Histrionicus histrionicus*
OLDS	Oldsquaw	*Clangula hyemalis*
BLSC	Black Scoter	*Melanitta nigra*
SUSC	Surf Scoter	*Melanitta perspicillata*
WWSC	White-winged Scoter	*Melanitta fusca*
COGO	Common Goldeneye	*Bucephala clangula*
BAGO	Barrow's Goldeneye	*Bucephala islandica*
BUFF	Bufflehead	*Bucephala albeola*
HOME	Hooded Merganser	*Lophodytes cucullatus*
COME	Common Merganser	*Mergus merganser*
RBME	Red-breasted Merganser	*Mergus serrator*
TUVU	Turkey Vulture	*Cathartes aura*
OSPR	Osprey	*Pandion haliaetus*
BAEA	Bald Eagle	*Haliaeetus leucocephalus*
NOHA	Northern Harrier	*Circus cyaneus*
SSHA	Sharp-shinned Hawk	*Accipter striatus*
COHA	Cooper's Hawk	*Accipter cooperii*
RTHA	Red-tailed Hawk	*Buteo jamaicensis*
AMKE	American Kestrel	*Falco sparverius*
MERL	Merlin	*Falco columbarius*
RNPH	Ring-necked Pheasant	*Phasianus colchicus*
RUGR	Ruffed Grouse	*Bonasa umbellus*
KILL	Killdeer	*Charadrius vociferus*
GRYE	Greater Yellowlegs	*Tringa melanoleuca*

Fanny Bay - Little Bay wetlands bird check-list (Cont'd).

Species Code	Species Name	Scientific Name
SPSA	Spotted Sandpiper	*Actitis macularia*
WHIM	Whimbrel	*Numenius phaeopus*
BLTU	Black Turnstone	*Arenaria melanocephala*
SAND	Sanderling	*Calidris alba*
WESA	Western Sandpiper	*Calidris mauri*
LESA	Least Sandpiper	*Calidris minutilla*
PESA	Pectoral Sandpiper	*Calidris melanotos*
DUNL	Dunlin	*Calidris alpina*
DOWI	Dowitcher	*Limnodromus sp.*
COSN	Common Snipe	*Gallinago gallinago*
BOGU	Bonaparte's Gull	*Larus philadelphia*
MEGU	Mew Gull	*Larus canus*
CAGU	California Gull	*Larus californicus*
HEGU	Herring Gull	*Larus argentatus*
THGU	Thayer's Gull	*Larus thayeri*
RBGU	Ring-billed Gull	*Larus delawarensis*
GWGU	Glaucous-winged Gull	*Larus glaucescens*
CATE	Caspian Tern	*Sterna caspia*
COTE	Common Tern	*Sterna hirundo*
PIGU	Pigeon Guillemot	*Cepphus columba*
MAMU	Marblet Murrelet	*Brachyrampus marmoratus*
RODO	Rock Dove	*Columba livia*
BTPI	Band-tailed Pigeon	*Columba fasciata*
SEOW	Short-eared Owl	*Asio flammeus*
WSOW	Western Screech-Owl	*Otus kennicottii*
BAOW	Barred Owl	*Strix varia*
CONI	Common Nighthawk	*Chordeiles minor*
RUHU	Rufous Hummingbird	*Selasphorus rufous*
BEKI	Belted Kingfisher	*Ceryle alcyon*
RBSA	Red-breasted Sapsucker	*Sphyrapicus ruber*
DOWO	Downy Woodpecker	*Picoides pubescens*
HAWO	Hairy Woodpecker	*Picoides villosus*
NOFL	Northern Flicker	*Colaptes auratus*
PIWO	Pileated Woodpecker	*Dryocopus pileatus*
OSFL	Olive-sided Flycatcher	*Contopus borealis*
WWPE	Western Wood-Peewee	*Contopus sordidulus*
WIFL	Willow Flycatcher	*Empidonax traillii*
HAFL	Hammond's Flycatcher	*Empidonax hammondi*
PSFL	Pacific-slope Flycatcher	*Empidonax difficilis*
TRSW	Tree Swallow	*Tachycineta bicolor*
VGSW	Violet-green Swallow	*Tachycinata thalassina*
NRWS	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
BASW	Barn Swallow	*Hirundo rustica*
GRJA	Gray Jay	*Perisoreus canadensis*
STJA	Steller's Jay	*Cyanocitta stelleri*
NOCR	Northwestern Crow	*Corvus caurinus*

Fanny Bay - Little Bay wetlands bird check-list (Cont'd).

Species Code	Species Name	Scientific Name
CORA	Common Raven	*Corvus corax*
CBCH	Chestnut-backed Chickadee	*Parus rufescens*
BUSH	Bushtit	*Psaltriparus minimus*
RBNU	Red-breasted Nuthatch	*Sitta canadensis*
BRCR	Brown Creeper	*Certhia americana*
MAWR	Marsh Wren	*Cistothorus palustris*
BEWR	Bewick's Wren	*Thryomanes bewickii*
HOWR	House Wren	*Troglodytes aedon*
WIWR	Winter Wren	*Troglodytes troglodytes*
AMDI	American Dipper	*Cinclus mexicanus*
GCKI	Golden-crowned Kinglet	*Regulus satrapa*
RCKI	Ruby-crowned Kinglet	*Regulus calendula*
SWTH	Swainson's Thrush	*Catharus ustulatus*
AMRO	American Robin	*Turdus migratorius*
VATH	Varied Thrush	*Ixoreus naevius*
BOWA	Bohemian Waxwing	*Bombycilla garrulus*
CEWA	Cedar Waxwing	*Bombycilla cedrorum*
NOSH	Northern Shrike	*Lanius excubitor*
EUST	European Starling	*Sturnus vulgarus*
SOVI	Solitary Vireo	*Vireo solitarius*
WAVI	Warbling Vireo	*Vireo gilvus*
HUVI	Hutton's Vireo	*Vireo huttoni*
REVI	Red-eyed Vireo	*Vireo olivaceus*
OCWA	Orange-crowned Warbler	*Vermivora celata*
YEWA	Yellow Warbler	*Dendroica petechia*
YRWA	Yellow-rumped Warbler	*Dendroica coronata*
BTGW	Black-throated Gray Warbler	*Dendroica nigrescens*
TOWA	Townsend's Warbler	*Dendroica townsendi*
MGWA	MacGillivray's Warbler	*Oporornis tolmiei*
COYE	Common Yellowthroat	*Geothlypis trichas*
WIWA	Wilson's Warbler	*Wilsonia pusilla*
RSTO	Rufous-sided Towhee	*Pipilo erythrophthalmus*
SAVS	Savannah Sparrow	*Passerculus sandwichensis*
FOSP	Fox Sparrow	*Passerella iliaca*
SOSP	Song Sparrow	*Melospiza melodia*
GCSP	Golden-crowned Sparrow	*Zonotrichia atricapilla*
WCSP	White-crowned Sparrow	*Zonotrichia leucophrys*
DEJU	Dark-eyed Junco	*Junco hyemalis*
RWBL	Red-winged Blackbird	*Agelaius phoeniceus*
WEME	Western Meadowlark	*Sturnella neglecta*
BRBL	Brewer's Blackbird	*Euphagus cyanocephalus*
BHCO	Brown-headed Cowbird	*Molothrus ater*
PUFI	Purple Finch	*Carpodacus purpureus*
HOFI	House Finch	*Carpodacus mexicanus*
RECR	Red Crossbill	*Loxia curvirostra*
PISI	Pine Siskin	*Carduelis pinus*
AMGO	American Goldfinch	*Carduelis tristis*
EVGR	Evening Grosbeak	*Coccothraustes vespertinus*

Appendix III.

Fanny Bay - Little Bay wetlands bird surveys: Seasonal bird numbers, September 1990 through August 1991.

Note: In this Appendix, the mean has been calculated as the total number of birds of species-x counted over the season, divided by the total number of counts where species-x occurred. Counts of zero have not been included in the total number of counts nor are they included as minimum values. Thus the last 5 columns in the Appendix summarize the species occurrence on the study area. For example, the probability of seeing a Common Loon in autumn on the Fanny Bay - Little Bay wetlands is about 75%. If you see the species, you are likely to see an average of about 5 birds and more than 11 would be exceptional.

Fanny Bay - Little Bay Wetlands All Habitat Report for Autumn 1990

Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq
#LOO	6	8	6	2	11	1	4	3	2	4	0	0	47	11	1	4.7	3.1	83.3
LOON	6	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6.0	-	8.3
COLO	0	8	6	2	11	1	4	3	2	4	0	0	41	11	1	4.6	3.2	75.0
#GRE	1	3	2	7	52	0	4	9	4	1	3	22	108	52	1	9.8	15.2	91.7
PBGR	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	-	8.3
HOGR	0	2	1	6	2	0	3	5	0	1	3	1	24	6	1	2.7	1.8	75.0
RNGR	1	0	0	0	0	0	0	1	0	0	0	0	2	1	1	1.0	-	16.7
WEGR	0	1	1	1	50	0	1	0	4	0	0	21	79	50	1	11.3	18.6	58.3
#COR	0	4	1	1	7	20	19	22	25	18	26	13	156	26	1	14.2	9.5	91.7
CORM	0	0	1	0	0	5	0	22	0	0	26	13	67	26	1	13.4	10.7	41.7
DCCO	0	0	0	0	4	9	14	0	17	12	0	0	56	17	4	11.2	5.0	41.7
PECO	0	4	0	1	3	6	5	0	8	6	0	0	33	8	1	4.7	2.3	58.3
#HER	1	5	4	8	2	1	3	1	0	0	2	4	31	8	1	3.1	2.2	83.3
GBHE	1	5	4	8	2	1	3	1	0	0	2	4	31	8	1	3.1	2.2	83.3
#SWA	0	0	0	0	0	0	0	0	0	0	5	0	5	5	5	5.0	-	8.3
TRUS	0	0	0	0	0	0	0	0	0	0	5	0	5	5	5	5.0	-	8.3
#DAB	31	71	26	18	64	59	90	128	250	170	75	182	1164	250	18	97.0	71.5	100.0
DABL	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
GWTE	20	48	20	18	42	18	15	104	210	90	7	160	752	210	7	62.7	65.6	100.0
TEAL	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	-	8.3
MALL	0	7	3	0	20	39	75	9	15	55	52	11	286	75	3	28.6	24.9	83.3
NOPI	1	11	2	0	0	0	0	12	8	0	0	0	34	12	1	6.8	5.1	41.7
NOSL	1	4	1	0	0	0	0	1	0	0	0	0	7	4	1	1.8	1.5	33.3
GADW	0	0	0	0	2	0	0	0	3	0	0	3	8	3	2	2.7	0.6	25.0
EUWI	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	8.3
AMWI	9	0	0	0	0	0	0	2	14	25	15	8	73	25	2	12.2	7.8	50.0
#DIV	53	67	74	116	171	221	258	283	235	478	326	239	2521	478	53	210.1	123.7	100.0
SCAU	0	0	0	0	0	0	17	100	17	150	120	140	544	150	17	90.7	59.6	50.0
GRSC	0	0	0	0	0	0	0	0	128	0	0	0	128	128	128	128.0	-	8.3
HADU	3	4	5	9	10	0	6	2	0	5	0	2	46	10	2	5.1	2.8	75.0
OLDS	0	0	0	0	0	0	0	0	4	0	0	0	4	4	4	4.0	-	8.3
SCOT	0	0	0	0	0	0	0	0	0	150	0	0	150	150	150	150.0	-	8.3
SUSC	0	15	3	2	50	120	112	37	39	120	50	23	571	120	2	51.9	45.1	91.7
WWSC	50	35	66	83	110	100	120	140	2	4	100	45	855	140	2	71.3	44.9	100.0
COGO	0	0	0	0	0	0	0	0	0	2	0	6	8	6	2	4.0	2.8	16.7
BAGO	0	0	0	0	0	0	0	0	8	12	3	4	27	12	3	6.8	4.1	33.3
BUFF	0	0	0	0	0	0	3	0	34	35	50	15	137	50	3	27.4	18.4	41.7
MERG	0	0	0	18	0	0	0	0	0	0	1	0	19	18	1	9.5	12.0	16.7
HOME	0	0	0	4	1	1	0	4	3	0	2	2	17	4	1	2.4	1.3	58.3
COME	0	13	0	0	0	0	0	0	0	0	0	1	14	13	1	7.0	8.5	16.7
RBME	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	8.3
#RAP	1	6	1	1	5	4	1	2	2	6	3	2	34	6	1	2.8	1.9	100.0
TUVU	0	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	8.3
OSPR	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
HAWK	0	0	0	0	1	1	0	0	0	0	0	1	3	1	1	1.0	-	25.0
BAEA	0	1	0	1	0	3	0	2	1	4	2	0	14	4	1	2.0	1.2	58.3
NOHA	0	0	0	0	0	0	0	0	1	1	0	1	3	1	1	1.0	-	25.0
SSHA	0	0	0	0	4	0	0	0	0	0	0	0	4	4	4	4.0	-	8.3
RTHA	0	1	1	0	0	0	1	0	0	0	1	0	4	1	1	1.0	-	33.3
MERL	1	1	0	0	0	0	0	0	0	1	0	0	3	1	1	1.0	-	25.0

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Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq
RUGR	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#SHO	7	6	10	9	5	5	5	4	0	160	76	202	489	202	4	44.5	71.3	91.7
KILL	5	0	3	4	0	0	0	3	0	0	6	2	23	6	2	3.8	1.5	50.0
GRYE	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	8.3
PESA	0	5	1	0	2	0	0	0	0	0	0	0	8	5	1	2.7	2.1	25.0
DUNL	0	0	0	0	0	0	0	0	0	160	70	200	430	200	70	143.3	66.6	25.0
DOWI	2	0	6	5	2	0	5	0	0	0	0	0	20	6	2	4.0	1.9	41.7
SHOR	0	1	0	0	1	5	0	0	0	0	0	0	7	5	1	2.3	2.3	25.0
#GUL	127	88	38	30	26	15	21	13	0	0	13	23	394	127	13	39.4	37.9	83.3
BOGU	87	62	25	0	10	0	0	0	0	0	0	0	184	87	10	46.0	35.0	33.3
MEGU	40	25	10	30	14	15	18	13	0	0	8	22	195	40	8	19.5	9.9	83.3
RBGU	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	8.3
GWGU	0	1	3	0	0	0	3	0	0	0	5	1	13	5	1	2.6	1.7	41.7
COTE	0	30	0	0	0	0	0	0	0	0	0	0	30	30	30	30.0	-	8.3
#ALC	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
PIGU	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#OWL	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	8.3
SEOW	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	8.3
RUHU	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
BEKI	0	2	3	0	1	3	6	2	2	2	2	2	25	6	1	2.5	1.4	83.3
#WOO	4	3	4	10	2	1	2	0	0	0	2	2	30	10	1	3.3	2.7	75.0
RBSA	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
DOWO	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
HAWO	0	0	1	1	1	0	0	0	0	0	1	0	4	1	1	1.0	-	33.3
NOFL	4	1	3	9	0	1	2	0	0	0	1	2	23	9	1	2.9	2.7	66.7
PIWO	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3

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Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq
#PAS	74	157	85	151	137	75	69	129	85	19	87	101	1169	157	19	97.4	39.8	100.0
STJA	2	2	7	7	10	3	9	0	0	0	1	1	42	10	1	4.7	3.6	75.0
NOCR	0	12	22	45	33	14	1	7	0	0	15	24	173	45	1	19.2	13.5	75.0
CORA	0	2	1	0	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	16.7
CBCH	3	0	2	6	7	8	7	2	4	0	4	5	48	8	2	4.8	2.1	83.3
BUSH	0	0	0	0	12	10	0	18	0	0	0	0	40	18	10	13.3	4.2	25.0
RBNU	3	0	3	1	4	0	3	0	0	0	0	0	14	4	1	2.8	1.1	41.7
BEWR	2	2	1	0	0	0	0	0	0	1	0	0	6	2	1	1.5	0.6	33.3
HOWR	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	8.3
WIWR	2	1	3	3	1	2	5	5	5	2	2	3	34	5	1	2.8	1.5	100.0
AMDI	0	0	0	0	0	0	0	0	0	0	1	3	4	3	1	2.0	1.4	16.7
GCKI	0	0	9	6	6	6	0	18	20	0	2	0	67	20	2	9.6	6.8	58.3
RCKI	0	1	0	0	0	0	0	3	4	0	0	0	8	4	1	2.7	1.5	25.0
AMRO	5	10	6	12	21	1	2	0	0	0	0	0	57	21	1	8.1	6.9	58.3
VATH	0	0	0	0	1	1	1	0	0	0	0	1	4	1	1	1.0	-	33.3
CEWA	8	60	0	0	0	0	0	0	0	0	0	0	68	60	8	34.0	36.8	16.7
NOSH	0	0	0	0	0	1	0	0	0	1	0	0	2	1	1	1.0	-	16.7
EUST	20	0	3	36	0	0	0	50	6	0	6	50	171	50	3	24.4	20.8	58.3
SOVI	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
HUVI	0	1	1	0	0	0	0	0	0	0	0	0	2	1	1	1.0	-	16.7
WARB	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
OCWA	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
YRWA	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
COYE	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
RSTO	2	4	3	4	7	4	4	3	10	1	3	2	47	10	1	3.9	2.4	100.0
SAVS	11	37	12	0	0	5	4	0	0	0	0	0	69	37	4	13.8	13.4	41.7
POSP	0	0	0	0	0	0	0	1	0	0	1	0	2	1	1	1.0	-	16.7
SOSP	5	4	5	3	15	8	5	5	6	2	11	4	73	15	2	6.1	3.7	100.0
GCSP	0	1	1	2	0	5	0	0	5	8	1	0	23	8	1	3.3	2.8	58.3
WCSP	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	8.3
DEJU	0	0	0	12	20	7	20	16	21	3	40	8	147	40	3	16.3	11.0	75.0
RWBL	0	3	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	-	8.3
FINC	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	8.3
PUFI	0	0	0	3	0	0	0	0	0	0	0	0	3	3	3	3.0	-	8.3
HOFI	0	5	4	11	0	0	8	1	2	0	0	0	31	11	1	5.2	3.8	50.0
RECR	8	0	0	0	0	0	0	0	0	0	0	0	8	8	8	8.0	-	8.3
AMGO	0	12	0	0	0	0	0	0	0	0	0	0	12	12	12	12.0	-	8.3
#TOT	305	452	254	353	483	406	482	596	605	859	620	792	6207	859	254	517.3	185.2	100.0

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Date	03Dec	10Dec	16Dec	23Dec	31Dec	08Jan	13Jan	20Jan	28Jan	04Feb	10Feb	17Feb	25Feb	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	1	3	0	0	3	9	1	0	2	1	0	20	9	1	2.9	2.9	53.8
LOON	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	-	7.7
PALO	0	0	0	0	0	0	0	6	0	0	0	0	0	6	6	6	6.0	-	7.7
COLO	0	0	1	3	0	0	1	3	1	0	2	1	0	12	3	1	1.7	1.0	53.8
#GRE	0	4	4	0	60	0	0	64	0	0	3	35	4	174	64	3	24.9	27.8	53.8
HOGR	0	4	4	0	0	0	0	4	0	0	3	2	4	21	4	2	3.5	0.8	46.2
WEGR	0	0	0	0	60	0	0	60	0	0	0	33	0	153	60	33	51.0	15.6	23.1
#COR	0	11	21	7	19	0	20	0	1	2	10	4	2	97	21	1	9.7	7.9	76.9
CORM	0	11	21	7	19	0	20	0	0	2	10	0	0	90	21	2	12.9	7.3	53.8
DCCO	0	0	0	0	0	0	0	0	1	0	0	3	0	4	3	1	2.0	1.4	15.4
PECO	0	0	0	0	0	0	0	0	0	0	0	1	2	3	2	1	1.5	0.7	15.4
#HER	1	4	4	0	0	0	0	2	0	2	4	2	0	19	4	1	2.7	1.3	53.8
GBHE	1	4	4	0	0	0	0	2	0	2	4	2	0	19	4	1	2.7	1.3	53.8
#SWA	0	7	7	9	22	3	15	15	12	13	4	3	10	120	22	3	10.0	5.7	92.3
TRUS	0	7	7	9	22	3	15	15	12	13	4	3	10	120	22	3	10.0	5.7	92.3
#GEE	0	0	0	0	0	0	0	0	0	20	0	0	0	20	20	20	20.0	-	7.7
CAGO	0	0	0	0	0	0	0	0	0	20	0	0	0	20	20	20	20.0	-	7.7
#DAB	104	268	74	331	293	178	179	130	458	30	249	317	322	2933	458	30	225.6	122.2	100.0
DABL	0	0	0	0	0	150	0	0	5	0	0	60	0	215	150	5	71.7	73.2	23.1
WODU	0	0	0	0	0	0	0	0	0	6	0	0	0	6	6	6	6.0	-	7.7
GWTE	100	152	0	120	53	16	30	42	84	0	12	13	28	650	152	12	59.1	47.9	84.6
MALL	4	45	18	97	151	12	51	45	71	22	72	60	45	693	151	4	53.3	39.5	100.0
NOPI	0	0	0	15	11	0	15	4	1	0	0	2	0	48	15	1	8.0	6.4	46.2
GADW	0	0	0	0	2	0	3	0	0	0	0	0	2	7	3	2	2.3	0.6	23.1
EUWI	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	-	7.7
AMWI	0	71	56	99	76	0	80	39	297	2	165	180	247	1312	297	2	119.3	91.7	84.6
#DIV	68	510	762	471	398	3	534	358	646	607	605	616	671	6249	762	3	480.7	226.7	100.0
DIVE	0	0	0	0	0	0	0	0	0	350	187	0	100	637	350	100	212.3	126.9	23.1
SCAU	30	380	550	287	286	0	350	250	470	120	282	420	436	3861	550	30	321.8	146.5	92.3
HADU	0	0	2	0	0	0	0	0	0	0	2	0	0	4	2	2	2.0	-	15.4
OLDS	0	0	0	0	0	0	7	0	0	0	0	0	0	7	7	7	7.0	-	7.7
BLSC	0	0	0	0	0	0	0	6	0	0	0	0	0	6	6	6	6.0	-	7.7
SUSC	0	34	60	22	0	0	135	31	63	0	1	75	57	478	135	1	53.1	38.5	69.2
WWSC	0	60	120	126	80	0	25	42	30	130	58	60	29	760	130	25	69.1	39.7	84.6
GOLD	0	4	5	0	0	0	0	0	0	1	0	0	0	10	5	1	3.3	2.1	23.1
COGO	0	15	5	6	1	0	4	4	12	0	24	12	12	95	24	1	9.5	6.9	76.9
BAGO	13	3	0	2	0	0	0	0	4	0	0	0	2	24	13	2	4.8	4.7	38.5
BUFF	25	13	20	27	31	3	12	23	67	6	51	48	34	360	67	3	27.7	18.7	100.0
HOME	0	1	0	1	0	0	0	2	0	0	0	1	0	5	2	1	1.3	0.5	30.8
COME	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	7.7
RBME	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	7.7
#RAP	0	4	6	6	5	1	9	2	2	0	2	2	1	40	9	1	3.6	2.6	84.6
BAEA	0	3	5	5	5	0	6	2	1	0	2	2	1	32	6	1	3.2	1.9	76.9
NOHA	0	0	0	0	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	15.4
RTHA	0	0	1	1	0	0	1	0	0	0	0	0	0	3	1	1	1.0	-	23.1
MERL	0	1	0	0	0	0	1	0	1	0	0	0	0	3	1	1	1.0	-	23.1

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Date	03Dec	10Dec	16Dec	23Dec	31Dec	08Jan	13Jan	20Jan	28Jan	04Feb	10Feb	17Feb	25Feb	Total	Max	Min	Mean	SD	%Freq
#SHO	221	70	43	2	3	6	3	3	17	0	4	3	4	379	221	2	31.6	63.3	92.3
KILL	0	0	1	2	1	2	3	3	8	0	0	3	1	24	8	1	2.7	2.2	69.2
GRYE	1	0	0	0	2	0	0	0	0	0	4	0	1	8	4	1	2.0	1.4	30.8
DUNL	220	0	42	0	0	4	0	0	9	0	0	0	2	277	220	2	55.4	93.4	38.5
SHOR	0	70	0	0	0	0	0	0	0	0	0	0	0	70	70	70	70.0	-	7.7
#GUL	31	10	16	9	43	3	27	3	20	58	11	34	25	290	58	3	22.3	16.3	100.0
GULL	31	1	12	6	43	3	27	3	20	58	10	34	21	269	58	1	20.7	17.4	100.0
MEGU	0	7	0	0	0	0	0	0	0	0	0	0	4	11	7	4	5.5	2.1	15.4
RBGU	0	1	0	0	0	0	0	0	0	0	1	0	0	2	1	1	1.0	-	15.4
GWGU	0	1	4	3	0	0	0	0	0	0	0	0	0	8	4	1	2.7	1.5	23.1
RODO	0	0	12	0	0	0	0	0	0	0	0	0	0	12	12	12	12.0	-	7.7
BEKI	0	1	3	2	1	0	0	2	2	0	1	0	0	12	3	1	1.7	0.8	53.8
#WOO	0	3	0	2	0	0	0	0	0	0	0	1	5	11	5	1	2.8	1.7	30.8
RBSA	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
HAWO	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	7.7
NOFL	0	2	0	0	0	0	0	0	0	0	0	0	5	7	5	2	3.5	2.1	15.4
PIWO	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7

Fanny Bay - Little Bay Wetlands All Habitat Report for Winter 1990-1991 (continued)

Date	03Dec	10Dec	16Dec	23Dec	31Dec	08Jan	13Jan	20Jan	28Jan	04Feb	10Feb	17Feb	25Feb	Total	Max	Min	Mean	SD	%Freq
#PAS	68	71	52	104	51	9	11	57	35	54	66	25	133	736	133	9	56.6	34.6	100.0
STJA	0	0	0	5	0	0	0	3	7	0	3	1	1	20	7	1	3.3	2.3	46.2
NOCR	18	10	0	0	32	0	0	14	2	52			27	156	52	1	19.5	17.1	61.5
CORA	0	0	0	0	0	1	1	0	0	0		0	0	2	1	1	1.0	-	15.4
CBCH	0	1	0	2	0	0	2	0	0	0	5	0	3	13	5	1	2.6	1.5	38.5
RBNU	0	0	0	1	0	0	1	1	0	0	0	0	1	4	1	1	1.0	-	30.8
BEWR	0	0	0	0	0	0	0	0	0	0	1	0	1	2	1	1	1.0	-	15.4
WIWR	0	5	2	4	1	0	0	0	1	0	0	1	1	15	5	1	2.1	1.7	53.8
AMDI	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
GCKI	0	8	10	6	0	0	0	3	3	0	1	0	3	34	10	1	4.9	3.2	53.8
RCKI	0	1	1	0	0	0	0	0	0	0	0	0	0	2	1	1	1.0	-	15.4
AMRO	0	0	0	0	0	0	0	2	0	1	0	7	15	25	15	1	6.3	6.4	30.8
VATH	0	0	2	0	0	0	0	0	0	0	0	2	0	4	2	2	2.0	-	15.4
NOSH	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
EUST	50	2	0	12	10	0	1	2	8	0	0	0	43	128	50	1	16.0	19.3	61.5
HUVI	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	7.7
RSTO	0	6	6	6	0	0	0	1	2	1	2	0	0	24	6	1	3.4	2.4	53.8
SPAR	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
POSP	0	1	0	0	1	1	0	0	0	0	0	0	0	3	1	1	1.0	-	23.1
SOSP	0	4	11	9	4	5	0	8	4	0	2	3	6	56	11	2	5.6	2.9	76.9
DEJU	0	30	20	38	2	2	6	3	6	0	25	10	22	164	38	2	14.9	12.6	84.6
RWBL	0	0	0	21	0	0	0	4	2	0	0	0	3	30	21	2	7.5	9.0	30.8
BRBL	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
FINC	0	0	0	0	0	0	0	8	0	0	0	0	6	14	8	6	7.0	1.4	15.4
PUFI	0	2	0	0	0	0	0	0	0	0	1	0	1	4	2	1	1.3	0.6	23.1
RECR	0	0	0	0	0	0	0	6	0	0	0	0	0	6	6	6	6.0	-	7.7
PASS	0	0	0	0	0	0	0	0	0	0	25	0	0	25	25	25	25.0	-	7.7
#TOT	493	963	1005	946	895	203	801	645	1194	786	961	1043	1177	11112	1194	203	854.8	276.5	100.0

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Date	04Mar	10Mar	17Mar	25Mar	01Apr	07Apr	14Apr	21Apr	29Apr	05May	12May	19May	27May	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	0	1	6	3	3	4	4	2	0	0	0	23	6	1	3.3	1.6	53.8
PALO	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
COLO	0	0	0	1	6	2	3	4	4	2	0	0	0	22	6	1	3.1	1.7	53.8
#GRE	0	3	0	0	28	10	43	49	13	15	44	0	0	205	49	3	25.6	17.8	61.5
HOGR	0	3	0	0	6	3	5	6	5	0	0	0	0	28	6	3	4.7	1.4	46.2
RNGR	0	0	0	0	0	1	0	3	0	0	0	0	0	4	3	1	2.0	1.4	15.4
WEGR	0	0	0	0	22	6	38	40	8	15	44	0	0	173	44	6	24.7	15.9	53.8
#COR	5	5	11	16	17	22	18	18	9	9	0	0	0	130	22	5	13.0	6.0	76.9
CORM	5	5	6	16	0	19	0	0	0	0	0	0	0	51	19	5	10.2	6.8	38.5
DCCO	0	0	0	0	2	1	3	5	4	2	0	0	0	17	5	1	2.8	1.5	46.2
BRCO	0	0	0	0	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	15.4
PECO	0	0	5	0	15	1	14	13	5	7	0	0	0	60	15	1	8.6	5.4	53.8
#HER	4	3	6	1	3	3	2	1	2	1	1	6	1	34	6	1	2.6	1.8	100.0
GBHE	4	3	6	1	3	3	2	1	2	1	1	6	1	34	6	1	2.6	1.8	100.0
#SWA	7	10	0	0	0	0	0	0	0	0	0	0	0	17	10	7	8.5	2.1	15.4
TRUS	7	10	0	0	0	0	0	0	0	0	0	0	0	17	10	7	8.5	2.1	15.4
#GEE	2	0	2	0	2	1	3	8	12	49	14	6	11	110	49	1	10.0	13.7	84.6
CAGO	2	0	2	0	2	1	3	8	12	49	14	6	11	110	49	1	10.0	13.7	84.6
#DAB	387	515	135	360	95	123	87	63	48	33	5	2	0	1853	515	2	154.4	169.4	92.3
DABL	300	0	45	50	0	0	0	0	0	0	0	0	0	395	300	45	131.7	145.8	23.1
WODU	0	0	6	0	0	2	0	0	0	0	0	0	0	8	6	2	4.0	2.8	15.4
GWTE	22	37	15	0	24	30	32	6	37	25	0	0	0	228	37	6	25.3	10.2	69.2
TEAL	0	4	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	-	7.7
MALL	8	97	40	8	34	23	55	24	8	8	5	2	0	312	97	2	26.0	27.7	92.3
NOPI	0	3	6	0	0	17	0	8	0	0	0	0	0	34	17	3	8.5	6.0	30.8
BWTE	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	-	7.7
EUWI	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
AMWI	57	374	23	300	37	51	0	25	0	0	0	0	0	867	374	23	123.9	147.7	53.8
#DIV	366	395	715	108	277	105	173	62	119	25	73	0	120	2538	715	25	211.5	198.2	92.3
DIVE	0	0	0	0	80	0	0	0	0	0	0	0	0	80	80	80	80.0	-	7.7
SCAU	0	230	480	100	0	0	0	0	0	0	0	0	0	810	480	100	270.0	193.1	23.1
GRSC	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
OLDS	0	1	0	0	0	0	0	0	0	2	0	0	0	3	2	1	1.5	0.7	15.4
SCOT	330	30	0	0	52	0	0	0	0	13	0	0	0	425	330	13	106.3	150.0	30.8
SUSC	0	21	78	0	15	0	0	2	13	0	0	0	0	129	78	2	25.8	30.0	38.5
WWSC	0	31	112	0	0	42	60	27	70	0	73	0	120	535	120	27	66.9	34.7	61.5
GOLD	10	0	0	0	0	0	0	2	0	0	0	0	0	12	10	2	6.0	5.7	15.4
COGO	0	30	12	0	32	10	4	0	0	0	0	0	0	88	32	4	17.6	12.6	38.5
BAGO	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
BUFF	25	51	33	8	78	44	102	28	34	7	0	0	0	410	102	7	41.0	29.8	76.9
COME	0	1	0	0	0	7	7	0	2	2	0	0	0	19	7	1	3.8	2.9	38.5
REME	0	0	0	0	0	0	0	3	0	1	0	0	0	4	3	1	2.0	1.4	15.4
DUCK	0	0	0	0	20	0	0	0	0	0	0	0	0	20	20	20	20.0	-	7.7
#RAP	2	1	1	4	2	1	2	4	2	2	1	0	2	24	4	1	2.0	1.0	92.3
OSPR	0	0	0	0	0	0	0	2	0	1	0	0	0	3	2	1	1.5	0.7	15.4
HAWK	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
BAEA	2	1	0	4	2	1	2	1	2	0	1	0	2	18	4	1	1.8	0.9	76.9
AMKE	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
MERL	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	7.7

Fanny Bay - Little Bay Wetlands All Habitat Report for Spring 1991 (continued)

Date	04Mar	10Mar	17Mar	25Mar	01Apr	07Apr	14Apr	21Apr	29Apr	05May	12May	19May	27May	Total	Max	Min	Mean	SD	%Freq
RUGR	0	0	0	0	0	1	1	0	1	0	1	0	0	4	1	1	1.0	-	30.8
#SHO	21	6	2	3	1	6	4	7	6	1020	3	1	1	1081	1020	1	83.2	281.5	100.0
KILL	10	2	2	3	1	3	1	2	3	0	2	1	1	31	10	1	2.6	2.5	92.3
GRYE	2	1	0	0	0	3	3	1	3	0	0	0	0	13	3	1	2.2	1.0	46.2
YELL	4	3	0	0	0	0	0	4	0	0	0	0	0	11	4	3	3.7	0.6	23.1
WESA	0	0	0	0	0	0	0	0	0	300	0	0	0	300	300	300	300.0	-	7.7
DUNL	5	0	0	0	0	0	0	0	0	20	0	0	0	25	20	5	12.5	10.6	15.4
COSN	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	7.7
SHOR	0	0	0	0	0	0	0	0	0	700	0	0	0	700	700	700	700.0	-	7.7
#GUL	97	59	18	60	6	44	56	68	68	74	23	1	12	586	97	1	45.1	30.1	100.0
GULL	95	59	16	60	6	36	8	0	45	1	21	1	12	360	95	1	30.0	29.5	92.3
BOGU	0	0	0	0	0	0	3	14	8	11	2	0	0	38	14	2	7.6	5.1	38.5
MEGU	2	0	2	0	0	6	45	54	15	56	0	0	0	180	56	2	25.7	24.9	53.8
GWGU	0	0	0	0	0	2	0	0	0	6	0	0	0	8	6	2	4.0	2.8	15.4
#ALC	0	0	0	0	1	0	0	0	2	0	0	0	0	3	2	1	1.5	0.7	15.4
PIGU	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
MAMU	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	2.0	-	7.7
BTPI	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	7.7
HUMM	0	0	0	0	0	0	5	0	0	4	0	0	2	11	5	2	3.7	1.5	23.1
RUHU	0	0	0	0	2	2	0	2	2	0	0	1	1	10	2	1	1.7	0.5	46.2
BEKI	1	2	0	0	2	3	0	2	1	0	1	1	2	15	3	1	1.7	0.7	69.2
#WOO	0	1	0	0	2	0	0	2	2	1	0	1	2	11	2	1	1.6	0.5	53.8
WOPE	0	0	0	0	1	0	0	0	1	0	0	0	1	3	1	1	1.0	-	23.1
NOFL	0	1	0	0	0	0	0	1	1	1	0	0	1	5	1	1	1.0	-	38.5
PIWO	0	0	0	0	1	0	0	1	0	0	0	1	0	3	1	1	1.0	-	23.1

Fanny Bay - Little Bay Wetlands All Habitat Report for Spring 1991 (continued)

Date	04Mar	10Mar	17Mar	25Mar	01Apr	07Apr	14Apr	21Apr	29Apr	05May	12May	19May	27May	Total	Max	Min	Mean	SD	%Freq
#PAS	97	58	107	35	51	95	97	68	77	74	65	83	118	1025	118	35	78.8	23.7	100.0
FLYC	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
HAFL	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	7.7
PSFL	0	0	0	0	0	0	0	0	0	1	1	1	1	4	1	1	1.0	-	30.8
SWAL	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4.0	-	7.7
VGSW	0	0	0	0	0	1	3	7	4	6	8	6	5	40	8	1	5.0	2.3	61.5
BASW	0	0	0	0	0	0	0	2	2	1	0	2	2	9	2	1	1.8	0.4	38.5
STJA	0	3	1	0	1	3	0	0	0	0	0	0	0	8	3	1	2.0	1.2	30.8
NOCR	15	16	22	20	4	10	28	0	15	4	20	6	30	190	30	4	15.8	8.7	92.3
CORA	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	7.7
CBCH	0	0	4	0	5	2	6	2	7	2	0	2	0	30	7	2	3.8	2.1	61.5
BUSH	0	0	2	2	0	0	0	0	0	0	0	2	0	6	2	2	2.0	-	23.1
RBNU	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
BEWR	0	0	1	0	0	1	0	0	0	2	0	1	2	7	2	1	1.4	0.5	38.5
WIWR	0	0	0	0	0	0	0	0	0	1	1	0	0	2	1	1	1.0	-	15.4
MAWR	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
GCKI	0	6	0	0	0	4	7	0	0	0	2	0	0	19	7	2	4.8	2.2	30.8
RCKI	0	0	0	0	1	9	0	0	1	0	0	0	0	11	9	1	3.7	4.6	23.1
SWTH	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	7.7
AMRO	25	21	12	7	16	13	18	15	15	8	6	2	6	164	25	2	12.6	6.6	100.0
VATH	3	2	4	0	0	4	0	0	0	0	0	0	0	13	4	2	3.3	1.0	30.8
BOWA	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
EUST	48	0	24	0	4	10	2	0	10	12	0	31	30	171	48	2	19.0	15.2	69.2
SOVI	0	0	0	0	0	0	0	0	0	1	1	2	0	4	2	1	1.3	0.6	23.1
HUVI	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	7.7
WAVI	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	7.7
WARB	0	0	0	0	0	0	0	2	0	3	0	0	1	6	3	1	2.0	1.0	23.1
OCWA	0	0	0	0	0	1	1	7	3	8	3	3	3	29	8	1	3.6	2.6	61.5
YEWA	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	7.7
YRWA	0	0	0	0	0	0	0	1	0	1	0	0	0	2	1	1	1.0	-	15.4
BTGW	0	0	0	0	0	0	0	1	3	3	2	3	1	13	3	1	2.2	1.0	46.2
TOWA	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	-	7.7
MGWA	0	0	0	0	0	0	0	0	0	1	1	1	1	4	1	1	1.0	-	30.8
COYE	0	0	0	0	0	0	0	2	1	1	1	0	0	5	2	1	1.3	0.5	30.8
WIWA	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	7.7
RSTO	1	2	1	0	0	5	0	3	0	0	1	0	2	15	5	1	2.1	1.5	53.8
SPAR	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	-	7.7
SAVS	0	0	0	0	0	1	1	1	0	1	0	0	0	4	1	1	1.0	-	30.8
FOSP	0	0	0	0	0	1	0	0	0	0	0	0	4	5	4	1	2.5	2.1	15.4
SOSP	2	5	6	2	5	12	2	5	2	3	4	5	2	55	12	2	4.2	2.8	100.0
GCSP	0	0	0	0	0	0	0	0	1	1	0	0	0	2	1	1	1.0	-	15.4
WCSP	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	7.7
DEJU	0	0	14	0	0	0	0	0	0	0	0	0	0	14	14	14	14.0	-	7.7
RWBL	1	2	8	4	7	8	15	5	7	1	5	6	6	75	15	1	5.8	3.7	100.0
BRBL	0	0	0	0	0	0	0	1	2	0	0	0	0	3	2	1	1.5	0.7	15.4
BHCO	0	0	0	0	0	0	0	0	0	0	1	1	1	3	1	1	1.0	-	23.1
PUFI	1	1	0	0	4	1	7	0	0	1	1	2	2	20	7	1	2.2	2.0	69.2
HOFI	0	0	8	0	2	5	0	0	0	3	3	0	2	23	8	2	3.8	2.3	46.2
RECR	0	0	0	0	0	0	1	2	0	0	0	0	0	3	2	1	1.5	0.7	15.4
PISI	0	0	0	0	2	0	4	11	0	1	0	0	1	19	11	1	3.8	4.2	38.5
AMGO	0	0	0	0	0	0	0	0	2	3	2	5	8	20	8	2	4.0	2.5	38.5
EVGR	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4	4	4.0	-	7.7
#TOT	989	1058	997	588	495	419	494	358	369	1309	231	102	272	7681	1309	102	590.8	374.1	100.0

Fanny Bay - Little Bay Wetlands All Habitat Report for Summer 1991

Date	02Jun	09Jun	17Jun	24Jun	22Jul	28Jul	04Aug	19Aug	25Aug	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
COLO	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
#HER	10	1	6	0	0	1	1	3	0	22	10	1	3.7	3.7	66.7
GBHE	10	1	6	0	0	1	1	3	0	22	10	1	3.7	3.7	66.7
#GEE	13	10	0	0	5	0	0	0	0	28	13	5	9.3	4.0	33.3
CAGO	13	10	0	0	5	0	0	0	0	28	13	5	9.3	4.0	33.3
#DAB	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
WODU	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
#DIV	65	80	78	140	0	120	0	12	18	513	140	12	73.3	47.6	77.8
DIVE	0	0	0	0	0	120	0	0	18	138	120	18	69.0	72.1	22.2
SCOT	0	80	0	0	0	0	0	0	0	80	80	80	80.0	-	11.1
WWSC	65	0	74	140	0	0	0	0	0	279	140	65	93.0	41.0	33.3
COME	0	0	4	0	0	0	0	12	0	16	12	4	8.0	5.7	22.2
#RAP	1	3	3	1	1	2	0	0	0	11	3	1	1.8	1.0	66.7
OSPR	0	1	2	0	0	0	0	0	0	3	2	1	1.5	0.7	22.2
BAEA	1	2	1	1	0	2	0	0	0	7	2	1	1.4	0.5	55.6
COHA	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	11.1
RNPH	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
RUGR	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
#SHO	4	0	0	2	0	2	8	0	310	326	310	2	65.2	136.9	55.6
KILL	4	0	0	2	0	0	0	0	0	6	4	2	3.0	1.4	22.2
GRYE	0	0	0	0	0	2	0	0	0	2	2	2	2.0	-	11.1
WESA	0	0	0	0	0	0	0	0	280	280	280	280	280.0	-	11.1
SHOR	0	0	0	0	0	0	8	0	30	38	30	8	19.0	15.6	22.2
#GUL	20	0	0	4	16	41	64	56	71	272	71	4	38.9	26.0	77.8
GULL	20	0	0	0	0	0	0	0	1	21	20	1	10.5	13.4	22.2
BOGU	0	0	0	2	5	10	12	23	24	76	24	2	12.7	9.1	66.7
MEGU	0	0	0	2	11	31	51	33	45	173	51	2	28.8	19.0	66.7
RBGU	0	0	0	0	0	0	1	0	1	2	1	1	1.0	-	22.2
CATE	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1
#ALC	0	0	2	0	0	0	0	0	0	2	2	2	2.0	-	11.1
PIGU	0	0	2	0	0	0	0	0	0	2	2	2	2.0	-	11.1
BTPI	1	1	0	1	0	0	0	0	4	7	4	1	1.8	1.5	44.4
HUMM	2	0	0	2	0	0	0	0	0	4	2	2	2.0	-	22.2
RUHU	1	4	2	2	0	0	0	0	0	9	4	1	2.3	1.3	44.4
BEKI	0	1	2	2	3	3	0	2	1	14	3	1	2.0	0.8	77.8
#WOO	0	3	1	1	0	1	0	0	1	7	3	1	1.4	0.9	55.6
WOPE	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	11.1
HAWO	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
NOFL	0	1	1	0	0	1	0	0	0	3	1	1	1.0	-	33.3
PIWO	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1

Fanny Bay - Little Bay Wetlands All Habitat Report for Summer 1991 (continued)

Date	02Jun	09Jun	17Jun	24Jun	22Jul	28Jul	04Aug	19Aug	25Aug	Total	Max	Min	Mean	SD	%Freq
#PAS	156	102	72	106	65	85	96	35	64	781	156	35	86.8	34.2	100.0
FLYC	0	0	0	0	1	0	1	0	0	2	1	1	1.0	-	22.2
WIFL	0	1	0	2	0	0	0	0	0	3	2	1	1.5	0.7	22.2
HAFL	1	1	0	0	0	0	0	0	0	2	1	1	1.0	-	22.2
PSFL	0	2	1	0	0	0	0	0	0	3	2	1	1.5	0.7	22.2
SWAL	12	10	6	6	0	0	0	0	0	34	12	6	8.5	3.0	44.4
TRSW	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
VGSW	2	0	0	2	1	2	0	0	0	7	2	1	1.8	0.5	44.4
BASW	3	2	4	2	0	2	13	0	0	26	13	2	4.3	4.3	66.7
NOCR	19	46	12	16	42	58	33	33	40	299	58	12	33.2	15.2	100.0
CORA	0	0	0	0	0	0	0	0	4	4	4	4	4.0	-	11.1
CBCH	3	3	4	1	3	0	6	0	2	22	6	1	3.1	1.6	77.8
BUSH	0	0	8	0	0	0	9	0	8	25	9	8	8.3	0.6	33.3
HRCR	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	11.1
BEWR	0	1	2	1	0	0	0	1	0	5	2	1	1.3	0.5	44.4
WIWR	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1
SWTH	2	5	8	3	2	0	0	0	0	20	8	2	4.0	2.5	55.6
AMRO	5	3	4	8	6	3	6	0	1	36	8	1	4.5	2.2	88.9
CEWA	0	0	3	0	0	0	3	0	0	6	3	3	3.0	-	22.2
EUST	80	0	0	40	0	0	2	0	0	122	80	2	40.7	39.0	33.3
SOVI	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	22.2
WAVI	0	2	2	2	0	0	0	0	0	6	2	2	2.0	-	33.3
REVI	0	0	1	2	0	0	0	0	0	3	2	1	1.5	0.7	22.2
WARB	0	0	0	0	0	0	3	0	0	3	3	3	3.0	-	11.1
OCWA	4	0	2	4	0	0	0	0	0	10	4	2	3.3	1.2	33.3
YEWA	3	3	1	1	0	0	0	0	0	8	3	1	2.0	1.2	44.4
MAWA	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
YRWA	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
BTGW	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1
MGWA	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
COYE	1	1	0	1	0	0	0	0	1	4	1	1	1.0	-	44.4
RSTO	2	2	1	1	1	0	1	0	0	8	2	1	1.3	0.5	66.7
SOSP	4	4	4	2	3	2	1	1	2	23	4	1	2.6	1.2	100.0
RWBL	5	9	0	4	0	4	4	0	0	26	9	4	5.2	2.2	55.6
BHCO	1	1	1	3	0	0	0	0	0	6	3	1	1.5	1.0	44.4
PUFI	1	1	3	0	0	3	0	0	0	8	3	1	2.0	1.2	44.4
HOFI	0	0	0	2	3	9	4	0	0	18	9	2	4.5	3.1	44.4
PISI	2	0	0	0	0	0	0	0	0	2	2	2	2.0	-	11.1
AMGO	4	2	4	1	3	2	9	0	6	31	9	1	3.9	2.6	88.9
#TOT	275	205	166	262	90	255	169	108	471	2001	471	90	222.3	114.1	100.0

Appendix IV

Fanny Bay - Little Bay wetlands bird surveys: Seasonal bird use by habitat, September 1990 through August 1991.

Note: In this Appendix, the mean has been calculated as the total number of birds of species-x counted over the season, divided by the total number of counts where species-x occurred. Counts of zero have not been included in the total number of counts nor are they included as minimum values. Thus the last 5 columns in the Appendix summarize the species occurrence on the study area. For example, the probability of seeing a Belted Kingfisher in autumn in the forest habitat unit on the Fanny Bay - Little Bay wetlands is about 50%. If you see the species, you are likely to see an average of about 2 birds and more than 4 would be exceptional.

Panny Bay - Little Bay Wetlands Bird Surveys of Subtidal Habitat for Autumn 1990

Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq
#LOO	2	8	6	0	11	0	0	3	2	2	0	0	34	11	2	4.9	3.6	58.3
LOON	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	8.3
COLO	0	8	6	0	11	0	0	3	2	2	0	0	32	11	2	5.3	3.7	50.0
#GRE	1	3	1	1	50	0	0	2	4	0	0	21	83	50	1	10.4	17.4	66.7
HOGR	0	2	0	0	0	0	0	1	0	0	0	0	3	2	1	1.5	0.7	16.7
RNGR	1	0	0	0	0	0	0	1	0	0	0	0	2	1	1	1.0	-	16.7
WEGR	0	1	1	1	50	0	0	0	4	0	0	21	78	50	1	13.0	19.7	50.0
#COR	0	4	1	0	7	0	0	0	0	0	0	0	12	7	1	4.0	3.0	25.0
CORM	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
DCCO	0	0	0	0	4	0	0	0	0	0	0	0	4	4	4	4.0	-	8.3
PECO	0	4	0	0	3	0	0	0	0	0	0	0	7	4	3	3.5	0.7	16.7
#HER	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
GBHE	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#DAB	9	0	0	0	0	0	0	0	0	0	0	0	9	9	9	9.0	-	8.3
AMWI	9	0	0	0	0	0	0	0	0	0	0	0	9	9	9	9.0	-	8.3
#DIV	53	54	69	0	160	0	0	7	52	0	0	20	415	160	7	59.3	49.4	58.3
GRSC	0	0	0	0	0	0	0	0	8	0	0	0	8	8	8	8.0	-	8.3
HADU	3	4	0	0	0	0	0	0	0	0	0	0	7	4	3	3.5	0.7	16.7
OLDS	0	0	0	0	0	0	0	0	4	0	0	0	4	4	4	4.0	-	8.3
SUSC	0	15	3	0	50	0	0	7	39	0	0	0	114	50	3	22.8	20.6	41.7
WWSC	50	35	66	0	110	0	0	0	1	0	0	20	282	110	1	47.0	38.3	50.0
#SHO	4	1	0	0	0	0	0	0	0	0	0	0	5	4	1	2.5	2.1	16.7
KILL	4	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	-	8.3
SHOR	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#GUL	63	25	3	0	0	0	0	0	0	0	0	0	91	63	3	30.3	30.4	25.0
BOGU	38	25	0	0	0	0	0	0	0	0	0	0	63	38	25	31.5	9.2	16.7
MEGU	25	0	0	0	0	0	0	0	0	0	0	0	25	25	25	25.0	-	8.3
GWGU	0	0	3	0	0	0	0	0	0	0	0	0	3	3	3	3.0	-	8.3
COTE	0	30	0	0	0	0	0	0	0	0	0	0	30	30	30	30.0	-	8.3
#ALC	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
PIGU	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#TOT	133	126	80	1	228	0	0	12	58	2	0	41	681	228	1	75.7	75.5	75.0

Fanny Bay - Little Bay Wetlands Bird Surveys of Subtidal Habitat for Winter 1990-1991

Date	03Dec	10Dec	16Dec	23Dec	31Dec	08Jan	13Jan	20Jan	28Jan	04Feb	10Feb	17Feb	25Feb	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	0	0	0	0	0	8	0	0	0	0	0	8	8	8	8.0	-	7.7
PALO	0	0	0	0	0	0	0	6	0	0	0	0	0	6	6	6	6.0	-	7.7
COLO	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	2	2.0	-	7.7
#GRE	0	4	0	0	60	0	0	64	0	0	0	33	4	165	64	4	33.0	29.0	38.5
HOGR	0	4	0	0	0	0	0	4	0	0	0	0	4	12	4	4	4.0	-	23.1
WEGR	0	0	0	0	60	0	0	60	0	0	0	33	0	153	60	33	51.0	15.6	23.1
#COR	0	11	0	0	0	0	0	0	0	0	0	0	0	11	11	11	11.0	-	7.7
CORM	0	11	0	0	0	0	0	0	0	0	0	0	0	11	11	11	11.0	-	7.7
#DIV	0	409	300	314	0	0	7	0	0	0	0	0	30	1060	409	7	212.0	181.7	38.5
SCAU	0	300	300	200	0	0	0	0	0	0	0	0	0	800	300	200	266.7	57.7	23.1
OLDS	0	0	0	0	0	0	7	0	0	0	0	0	0	7	7	7	7.0	-	7.7
SUSC	0	34	0	0	0	0	0	0	0	0	0	0	0	34	34	34	34.0	-	7.7
WWSC	0	60	0	110	0	0	0	0	0	0	0	0	29	199	110	29	66.3	40.9	23.1
COGO	0	15	0	0	0	0	0	0	0	0	0	0	0	15	15	15	15.0	-	7.7
BUFF	0	0	0	4	0	0	0	0	0	0	0	0	0	4	4	4	4.0	-	7.7
RBME	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	7.7
#RAP	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
BAEA	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#GUL	0	0	0	0	0	0	0	0	0	0	0	0	8	8	8	8	8.0	-	7.7
GULL	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4.0	-	7.7
MEGU	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4.0	-	7.7
#TOT	0	424	301	314	60	0	7	72	0	0	0	33	42	1253	424	7	156.6	162.3	61.5

Fanny Bay - Little Bay Wetlands Bird Surveys of Subtidal Habitat for Spring 1991

Date	04Mar	10Mar	17Mar	25Mar	01Apr	07Apr	14Apr	21Apr	29Apr	05May	12May	19May	27May	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	0	0	0	0	0	0	2	1	0	0	0	3	2	1	1.5	0.7	15.4
COLO	0	0	0	0	0	0	0	0	2	1	0	0	0	3	2	1	1.5	0.7	15.4
#GRE	0	3	0	0	22	0	38	40	8	15	44	0	0	170	44	3	24.3	16.5	53.8
HOGR	0	3	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	-	7.7
WEGR	0	0	0	0	22	0	38	40	8	15	44	0	0	167	44	8	27.8	14.9	46.2
#DIV	0	24	40	0	5	0	0	0	45	6	73	0	120	313	120	5	44.7	40.8	53.8
OLDS	0	1	0	0	0	0	0	0	0	2	0	0	0	3	2	1	1.5	0.7	15.4
SCOT	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3	3	3.0	-	7.7
WWSC	0	23	40	0	0	0	0	0	45	0	73	0	120	301	120	23	60.2	38.0	38.5
BUFF	0	0	0	0	5	0	0	0	0	0	0	0	0	5	5	5	5.0	-	7.7
RBME	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	7.7
#RAP	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
BAEA	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#TOT	0	27	40	0	28	0	38	40	55	22	117	0	120	487	120	22	54.1	37.8	69.2

Fanny Bay - Little Bay Wetlands Bird Surveys of Subtidal Habitat for Summer 1991

Date	02Jun	09Jun	17Jun	24Jun	22Jul	28Jul	04Aug	19Aug	25Aug	Total	Max	Min	Mean	SD	%Freq
#DIV	0	80	0	0	0	120	0	0	0	200	120	80	100.0	28.3	22.2
DIVE	0	0	0	0	0	120	0	0	0	120	120	120	120.0	-	11.1
SCOT	0	80	0	0	0	0	0	0	0	80	80	80	80.0	-	11.1
#TOT	0	80	0	0	0	120	0	0	0	200	120	80	100.0	28.3	22.2

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Flats Habitat for Autumn 1990

Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq	n
#LOO	4	0	0	2	0	1	4	0	0	2	0	0	13	4	1	2.6	1.3	41.7	
LOON	4	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	-	8.3	
COLO	0	0	0	2	0	1	4	0	0	2	0	0	9	4	1	2.3	1.3	33.3	
#GRE	0	0	1	6	2	0	4	7	0	1	3	1	25	7	1	3.1	2.4	66.7	
PBGR	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	-	8.3	
HOGR	0	0	1	6	2	0	3	4	0	1	3	1	21	6	1	2.6	1.8	66.7	
WEGR	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	8.3	
#COR	0	0	0	1	0	20	19	22	25	18	26	13	144	26	1	18.0	8.0	66.7	
CORM	0	0	0	0	0	5	0	22	0	0	26	13	66	26	5	16.5	9.4	33.3	
DCCO	0	0	0	0	0	9	14	0	17	12	0	0	52	17	9	13.0	3.4	33.3	
PECO	0	0	0	1	0	6	5	0	8	6	0	0	26	8	1	5.2	2.6	41.7	
#HER	0	2	2	1	0	0	0	0	0	0	0	0	5	2	1	1.7	0.6	25.0	
GBHE	0	2	2	1	0	0	0	0	0	0	0	0	5	2	1	1.7	0.6	25.0	
#SWA	0	0	0	0	0	0	0	0	0	0	5	0	5	5	5	5.0	-	8.3	
TRUS	0	0	0	0	0	0	0	0	0	0	5	0	5	5	5	5.0	-	8.3	
#DAB	0	20	0	0	0	32	57	5	22	51	5	6	198	57	5	24.8	20.5	66.7	
GWTE	0	18	0	0	0	0	0	0	14	0	0	0	32	18	14	16.0	2.8	16.7	
MALL	0	2	0	0	0	32	57	5	0	37	5	6	144	57	2	20.6	21.5	58.3	
AMWI	0	0	0	0	0	0	0	0	8	14	0	0	22	14	8	11.0	4.2	16.7	
#DIV	0	13	5	116	10	220	258	272	170	478	324	123	1989	478	5	180.8	148.5	91.7	
SCAU	0	0	0	0	0	0	17	100	17	150	120	60	464	150	17	77.3	55.1	50.0	
GRSC	0	0	0	0	0	0	0	0	120	0	0	0	120	120	120	120.0	-	8.3	
HADU	0	0	5	9	10	0	6	2	0	5	0	2	39	10	2	5.6	3.1	58.3	
SCOT	0	0	0	0	0	0	0	0	0	150	0	0	150	150	150	150.0	-	8.3	
SUSC	0	0	0	2	0	120	112	30	0	120	50	23	457	120	2	65.3	50.7	58.3	
WWSC	0	0	0	83	0	100	120	140	1	4	100	25	573	140	1	71.6	54.1	66.7	
COGO	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	-	8.3	
BAGO	0	0	0	0	0	0	0	0	2	12	3	2	19	12	2	4.8	4.9	33.3	
BUFF	0	0	0	0	0	0	3	0	30	35	50	11	129	50	3	25.8	18.9	41.7	
MERG	0	0	0	18	0	0	0	0	0	0	1	0	19	18	1	9.5	12.0	16.7	
HOME	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	-	8.3	
COME	0	13	0	0	0	0	0	0	0	0	0	0	13	13	13	13.0	-	8.3	
#RAP	0	2	0	1	0	3	0	1	0	0	0	0	7	3	1	1.8	1.0	33.3	
OSPR	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3	
BAEA	0	1	0	1	0	3	0	1	0	0	0	0	6	3	1	1.5	1.0	33.3	
#SHO	1	0	0	4	0	0	0	3	0	160	70	200	438	200	1	73.0	87.8	50.0	
KILL	1	0	0	4	0	0	0	3	0	0	0	0	8	4	1	2.7	1.5	25.0	
DUNL	0	0	0	0	0	0	0	0	0	160	70	200	430	200	70	143.3	66.6	25.0	
#GUL	55	63	35	30	13	15	21	13	0	0	0	0	245	63	13	30.6	19.3	66.7	
BOGU	40	37	25	0	3	0	0	0	0	0	0	0	105	40	3	26.3	16.8	33.3	
MEGU	15	25	10	30	10	15	18	13	0	0	0	0	136	30	10	17.0	7.1	66.7	
GWGU	0	1	0	0	0	0	3	0	0	0	0	0	4	3	1	2.0	1.4	16.7	
BEKI	0	0	0	0	0	0	1	0	1	0	0	0	2	1	1	1.0	-	16.7	
#PAS	0	0	0	10	0	14	1	0	0	0	0	0	25	14	1	8.3	6.7	25.0	
NOCR	0	0	0	10	0	14	1	0	0	0	0	0	25	14	1	8.3	6.7	25.0	
#TOT	60	100	43	171	25	305	365	323	218	710	433	343	3096	710	25	258.0	198.6	100.0	

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Flats Habitat for Winter 1990-1991

Date	03Dec	10Dec	16Dec	23Dec	31Dec	08Jan	13Jan	20Jan	28Jan	04Feb	10Feb	17Feb	25Feb	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	1	3	0	0	3	1	1	0	2	1	0	12	3	1	1.7	1.0	53.8
LOON	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	-	7.7
COLO	0	0	1	3	0	0	1	1	1	0	2	1	0	10	3	1	1.4	0.8	53.8
#GRE	0	0	4	0	0	0	0	0	0	0	3	2	0	9	4	2	3.0	1.0	23.1
HOGR	0	0	4	0	0	0	0	0	0	0	3	2	0	9	4	2	3.0	1.0	23.1
#COR	0	0	21	7	19	0	20	0	1	2	10	4	2	86	21	1	9.6	8.3	69.2
CORM	0	0	21	7	19	0	20	0	0	2	10	0	0	79	21	2	13.2	7.9	46.2
DCCO	0	0	0	0	0	0	0	0	1	0	0	3	0	4	3	1	2.0	1.4	15.4
PECO	0	0	0	0	0	0	0	0	0	0	0	1	2	3	2	1	1.5	0.7	15.4
#HER	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
GBHE	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#DAB	0	124	0	24	0	0	0	0	297	2	96	22	120	685	297	2	97.9	101.0	53.8
GWTE	0	25	0	0	0	0	0	0	0	0	0	0	28	53	28	25	26.5	2.1	15.4
MALL	0	34	0	24	0	0	0	0	0	2	33	0	36	129	36	2	25.8	14.1	38.5
NOPI	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	-	7.7
GADW	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	7.7
AMWI	0	65	0	0	0	0	0	0	297	0	63	20	54	499	297	20	99.8	111.7	38.5
#DIV	30	100	462	150	391	3	527	349	429	607	598	615	640	4901	640	3	377.0	232.6	100.0
DIVE	0	0	0	0	0	0	0	0	0	350	187	0	100	637	350	100	212.3	126.9	23.1
SCAU	0	80	250	87	280	0	350	250	260	120	282	420	436	2815	436	80	255.9	121.5	84.6
HADU	0	0	2	0	0	0	0	0	0	0	2	0	0	4	2	2	2.0	-	15.4
SUSC	0	0	60	22	0	0	135	31	63	0	1	75	57	444	135	1	55.5	40.5	61.5
WWSC	0	0	120	16	80	0	25	42	30	130	58	60	0	561	130	16	62.3	40.7	69.2
GOLD	0	4	5	0	0	0	0	0	0	1	0	0	0	10	5	1	3.3	2.1	23.1
COGO	0	0	5	6	1	0	4	4	12	0	24	12	12	80	24	1	8.9	7.0	69.2
BAGO	13	3	0	2	0	0	0	0	4	0	0	0	2	24	13	2	4.8	4.7	38.5
BUFF	17	12	20	17	30	3	12	22	60	6	44	48	33	324	60	3	24.9	17.2	100.0
HOME	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
COME	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#RAP	0	1	0	0	1	0	1	2	0	0	2	2	0	9	2	1	1.5	0.5	46.2
BAEA	0	1	0	0	1	0	1	2	0	0	2	2	0	9	2	1	1.5	0.5	46.2
#SHO	60	70	0	0	0	0	0	0	0	0	0	0	0	130	70	60	65.0	7.1	15.4
DUNL	60	0	0	0	0	0	0	0	0	0	0	0	0	60	60	60	60.0	-	7.7
SHOR	0	70	0	0	0	0	0	0	0	0	0	0	0	70	70	70	70.0	-	7.7
#GUL	0	8	1	0	13	0	0	3	20	0	4	0	0	49	20	1	8.2	7.2	46.2
GULL	0	0	0	0	13	0	0	3	20	0	3	0	0	39	20	3	9.8	8.3	30.8
MEGU	0	7	0	0	0	0	0	0	0	0	0	0	0	7	7	7	7.0	-	7.7
RBGU	0	1	0	0	0	0	0	0	0	0	1	0	0	2	1	1	1.0	-	15.4
GWGU	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
BEKI	0	0	1	0	0	0	0	0	0	0	1	0	0	2	1	1	1.0	-	15.4
#TOT	91	303	490	184	424	3	551	355	748	611	716	646	762	5884	762	3	452.6	252.3	100.0

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Flats Habitat for Spring 1991

Date	04Mar	10Mar	17Mar	25Mar	01Apr	07Apr	14Apr	21Apr	29Apr	05May	12May	19May	27May	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	0	1	6	3	3	4	2	1	0	0	0	20	6	1	2.9	1.8	53.8
PALO	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
COLO	0	0	0	1	6	2	3	4	2	1	0	0	0	19	6	1	2.7	1.8	53.8
#GRE	0	0	0	0	6	10	5	9	5	0	0	0	0	35	10	5	7.0	2.3	38.5
HOGR	0	0	0	0	6	3	5	6	5	0	0	0	0	25	6	3	5.0	1.2	38.5
RNGR	0	0	0	0	0	1	0	3	0	0	0	0	0	4	3	1	2.0	1.4	15.4
WEGR	0	0	0	0	0	6	0	0	0	0	0	0	0	6	6	6	6.0	-	7.7
#COR	5	5	11	16	17	22	18	18	9	9	0	0	0	130	22	5	13.0	6.0	76.9
CORM	5	5	6	16	0	19	0	0	0	0	0	0	0	51	19	5	10.2	6.8	38.5
DCCO	0	0	0	0	2	1	3	5	4	2	0	0	0	17	5	1	2.8	1.5	46.2
BRCO	0	0	0	0	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	15.4
PECO	0	0	5	0	15	1	14	13	5	7	0	0	0	60	15	1	8.6	5.4	53.8
#HER	0	0	1	0	2	0	0	0	0	0	0	1	0	4	2	1	1.3	0.6	23.1
GBHE	0	0	1	0	2	0	0	0	0	0	0	1	0	4	2	1	1.3	0.6	23.1
#DAB	0	60	39	207	60	0	0	55	0	0	0	0	0	421	207	39	84.2	69.2	38.5
MALL	0	0	22	5	23	0	0	24	0	0	0	0	0	74	24	5	18.5	9.0	30.8
NOPI	0	0	0	0	0	0	0	6	0	0	0	0	0	6	6	6	6.0	-	7.7
EUWI	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
AMWI	0	60	17	200	37	0	0	25	0	0	0	0	0	339	200	17	67.8	75.7	38.5
#DIV	365	219	555	0	252	50	166	62	44	19	0	0	0	1732	555	19	192.4	178.7	69.2
DIVE	0	0	0	0	80	0	0	0	0	0	0	0	0	80	80	80	80.0	-	7.7
SCAU	0	80	360	0	0	0	0	0	0	0	0	0	0	440	360	80	220.0	198.0	15.4
SCOT	330	30	0	0	52	0	0	0	0	10	0	0	0	422	330	10	105.5	150.6	30.8
SUSC	0	21	78	0	15	0	0	2	13	0	0	0	0	129	78	2	25.8	30.0	38.5
WWSC	0	8	72	0	0	0	60	27	25	0	0	0	0	192	72	8	38.4	26.6	38.5
GOLD	10	0	0	0	0	0	0	2	0	0	0	0	0	12	10	2	6.0	5.7	15.4
COGO	0	30	12	0	32	6	4	0	0	0	0	0	0	84	32	4	16.8	13.3	38.5
BUFF	25	50	33	0	73	44	102	28	4	7	0	0	0	366	102	4	40.7	31.3	69.2
COME	0	0	0	0	0	0	0	0	2	2	0	0	0	4	2	2	2.0	-	15.4
RBME	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3	3	3.0	-	7.7
#RAP	2	0	0	0	1	1	2	0	0	1	0	0	2	9	2	1	1.5	0.5	46.2
OSPR	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	7.7
BAEA	2	0	0	0	1	1	2	0	0	0	0	0	2	8	2	1	1.6	0.5	38.5
#SHO	0	0	0	0	0	0	0	0	3	660	0	1	0	664	660	1	221.3	379.9	23.1
KILL	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	7.7
GRYE	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	-	7.7
WESA	0	0	0	0	0	0	0	0	0	150	0	0	0	150	150	150	150.0	-	7.7
DUNL	0	0	0	0	0	0	0	0	0	10	0	0	0	10	10	10	10.0	-	7.7
SHOR	0	0	0	0	0	0	0	0	0	500	0	0	0	500	500	500	500.0	-	7.7
#GUL	8	48	18	60	6	2	43	0	36	40	12	0	12	285	60	2	25.9	20.0	84.6
GULL	8	48	16	60	6	0	8	0	15	0	10	0	12	183	60	6	20.3	19.6	69.2
BOGU	0	0	0	0	0	0	0	0	6	3	2	0	0	11	6	2	3.7	2.1	23.1
MEGU	0	0	2	0	0	0	35	0	15	34	0	0	0	86	35	2	21.5	15.9	30.8
GWGU	0	0	0	0	0	2	0	0	0	3	0	0	0	5	3	2	2.5	0.7	15.4
#ALC	0	0	0	0	1	0	0	0	2	0	0	0	0	3	2	1	1.5	0.7	15.4
PIGU	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
MAMU	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	2.0	-	7.7
#PAS	0	0	0	0	0	0	28	0	10	0	20	6	28	92	28	6	18.4	10.1	38.5
NOCR	0	0	0	0	0	0	28	0	10	0	20	6	28	92	28	6	18.4	10.1	38.5
#TOT	380	332	624	284	351	88	265	148	111	730	32	8	42	3395	730	8	261.2	225.3	100.0

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Flats Habitat for Summer 1991

Date	02Jun	09Jun	17Jun	24Jun	22Jul	28Jul	04Aug	19Aug	25Aug	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
COLO	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
#HER	2	0	1	0	0	1	1	3	0	8	3	1	1.6	0.9	55.6
GBHE	2	0	1	0	0	1	1	3	0	8	3	1	1.6	0.9	55.6
#GEE	13	0	0	0	5	0	0	0	0	18	13	5	9.0	5.7	22.2
CAGO	13	0	0	0	5	0	0	0	0	18	13	5	9.0	5.7	22.2
#DIV	65	0	78	140	0	0	0	12	18	313	140	12	62.6	51.9	55.6
DIVE	0	0	0	0	0	0	0	0	18	18	18	18	18.0	-	11.1
WWSC	65	0	74	140	0	0	0	0	0	279	140	65	93.0	41.0	33.3
COME	0	0	4	0	0	0	0	12	0	16	12	4	8.0	5.7	22.2
#RAP	1	1	2	1	0	2	0	0	0	7	2	1	1.4	0.5	55.6
OSPR	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	22.2
BAEA	1	0	1	1	0	2	0	0	0	5	2	1	1.3	0.5	44.4
#SHO	0	0	0	0	0	2	8	0	280	290	280	2	96.7	158.8	33.3
GRYE	0	0	0	0	0	2	0	0	0	2	2	2	2.0	-	11.1
WESA	0	0	0	0	0	0	0	0	280	280	280	280	280.0	-	11.1
SHOR	0	0	0	0	0	0	8	0	0	8	8	8	8.0	-	11.1
#GUL	20	0	0	4	16	41	62	54	67	264	67	4	37.7	24.6	77.8
GULL	20	0	0	0	0	0	0	0	0	20	20	20	20.0	-	11.1
BOGU	0	0	0	2	5	10	10	21	21	69	21	2	11.5	8.0	66.7
MEGU	0	0	0	2	11	31	51	33	45	173	51	2	28.8	19.0	66.7
RBGU	0	0	0	0	0	0	1	0	1	2	1	1	1.0	-	22.2
#ALC	0	0	2	0	0	0	0	0	0	2	2	2	2.0	-	11.1
PIGU	0	0	2	0	0	0	0	0	0	2	2	2	2.0	-	11.1
#PAS	8	35	0	16	42	58	33	33	0	225	58	8	32.1	16.4	77.8
NOCR	8	35	0	16	42	58	33	33	0	225	58	8	32.1	16.4	77.8
#TOT	109	36	83	161	63	104	104	102	366	1128	366	36	125.3	96.5	100.0

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh North Habitat for Autumn 1990

Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	16.7
GBHE	0	0	0	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	16.7
#DAB	0	0	3	0	17	0	12	4	55	17	12	3	123	55	3	15.4	17.0	66.7
GWTE	0	0	0	0	0	0	8	0	46	0	0	0	54	46	8	27.0	26.9	16.7
MALL	0	0	3	0	15	0	4	4	0	14	12	0	52	15	3	8.7	5.6	50.0
NOPI	0	0	0	0	0	0	0	0	6	0	0	0	6	6	6	6.0	-	8.3
GADW	0	0	0	0	2	0	0	0	3	0	0	3	8	3	2	2.7	0.6	25.0
AMWI	0	0	0	0	0	0	0	0	0	3	0	0	3	3	3	3.0	-	8.3
#DIV	0	0	0	0	0	0	0	1	2	0	0	90	93	90	1	31.0	51.1	25.0
SCAU	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80.0	-	8.3
COGO	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6.0	-	8.3
BAGO	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	8.3
BUFF	0	0	0	0	0	0	0	0	2	0	0	0	2	2	2	2.0	-	8.3
HOME	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	8.3
COME	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	8.3
RBME	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	8.3
#RAP	0	0	0	0	0	0	0	0	0	2	2	1	5	2	1	1.7	0.6	25.0
HAWK	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	8.3
BAEA	0	0	0	0	0	0	0	0	0	2	2	0	4	2	2	2.0	-	16.7
#GUL	0	0	0	0	13	0	0	0	0	0	13	22	48	22	13	16.0	5.2	25.0
BOGU	0	0	0	0	7	0	0	0	0	0	0	0	7	7	7	7.0	-	8.3
MEGU	0	0	0	0	4	0	0	0	0	0	8	22	34	22	4	11.3	9.5	25.0
RBGU	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	8.3
GWGU	0	0	0	0	0	0	0	0	0	0	5	0	5	5	5	5.0	-	8.3
#OWL	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	8.3
SEOW	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	8.3
BEKI	0	0	0	0	0	2	1	1	1	1	0	0	6	2	1	1.2	0.4	41.7
#WOO	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	8.3
NOFL	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	8.3
#PAS	0	0	0	22	20	0	33	0	7	6	25	84	197	84	6	28.1	26.4	58.3
NOCR	0	0	0	0	18	0	0	0	0	0	0	24	42	24	18	21.0	4.2	16.7
WIWR	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	8.3
AMDI	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	8.3
AMRO	0	0	0	6	0	0	0	0	0	0	0	0	6	6	6	6.0	-	8.3
NOSH	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	8.3
EUST	0	0	0	16	0	0	0	0	6	0	0	50	72	50	6	24.0	23.1	25.0
RSTO	0	0	0	0	0	0	0	0	1	0	2	0	3	2	1	1.5	0.7	16.7
SAVS	0	0	0	0	0	0	4	0	0	0	0	0	4	4	4	4.0	-	8.3
POSP	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	8.3
SOSP	0	0	0	0	2	0	3	0	0	0	6	0	11	6	2	3.7	2.1	25.0
GCSP	0	0	0	0	0	0	0	0	0	5	1	0	6	5	1	3.0	2.8	16.7
DEJU	0	0	0	0	0	0	20	0	0	0	15	8	43	20	8	14.3	6.0	25.0
HOFI	0	0	0	0	0	0	5	0	0	0	0	0	5	5	5	5.0	-	8.3
#TOT	0	0	3	22	51	3	47	6	65	27	52	200	476	200	3	47.6	58.1	83.3

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh North Habitat for Winter 1990-1991

Date	03Dec	10Dec	16Dec	23Dec	31Dec	08Jan	13Jan	20Jan	28Jan	04Feb	10Feb	17Feb	25Feb	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	3	0	0	0	0	1	0	0	2	0	0	6	3	1	2.0	1.0	23.1
GBHE	0	0	3	0	0	0	0	1	0	0	2	0	0	6	3	1	2.0	1.0	23.1
#SWA	0	7	7	9	22	0	13	15	12	12	4	3	10	114	22	3	10.4	5.4	84.6
TRUS	0	7	7	9	22	0	13	15	12	12	4	3	10	114	22	3	10.4	5.4	84.6
#DAB	0	0	49	103	31	1	0	33	138	0	134	277	193	959	277	1	106.6	89.3	69.2
DABL	0	0	0	0	0	0	0	0	0	0	0	60	0	60	60	60	60.0	-	7.7
GWTE	0	0	0	10	0	1	0	0	76	0	6	13	0	106	76	1	21.2	31.0	38.5
MALL	0	0	0	8	9	0	0	0	61	0	28	42	0	148	61	8	29.6	22.5	38.5
NOPI	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	7.7
GADW	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
EUWI	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	-	7.7
AMWI	0	0	49	85	20	0	0	33	0	0	100	160	193	640	193	20	91.4	65.1	53.8
#DIV	0	0	0	7	7	0	0	1	217	0	7	0	0	239	217	1	47.8	94.6	38.5
SCAU	0	0	0	0	6	0	0	0	210	0	0	0	0	216	210	6	108.0	144.2	15.4
BUFF	0	0	0	6	1	0	0	0	7	0	7	0	0	21	7	1	5.3	2.9	30.8
HOME	0	0	0	1	0	0	0	1	0	0	0	0	0	2	1	1	1.0	-	15.4
#RAP	0	0	4	0	2	0	1	0	0	0	0	0	1	8	4	1	2.0	1.4	30.8
BAEA	0	0	4	0	2	0	0	0	0	0	0	0	1	7	4	1	2.3	1.5	23.1
MERL	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#SHO	0	0	43	1	0	2	0	3	9	0	0	0	1	59	43	1	9.8	16.5	46.2
KILL	0	0	1	1	0	2	0	3	0	0	0	0	1	8	3	1	1.6	0.9	38.5
DUNL	0	0	42	0	0	0	0	0	9	0	0	0	0	51	42	9	25.5	23.3	15.4
#GUL	0	1	12	6	15	0	25	0	0	0	7	33	12	111	33	1	13.9	10.5	61.5
GULL	0	1	12	6	15	0	25	0	0	0	7	33	12	111	33	1	13.9	10.5	61.5
BEKI	0	1	2	1	1	0	0	2	2	0	0	0	0	9	2	1	1.5	0.5	46.2
#WOO	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
NOFL	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#PAS	0	46	6	7	30	0	0	11	0	14	15	0	22	151	46	6	18.9	13.5	61.5
NOCR	0	10	0	0	24	0	0	8	0	12	0	0	19	73	24	8	14.6	6.7	38.5
AMRO	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	7.7
NOSH	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
EUST	0	0	0	0	6	0	0	0	0	0	0	0	0	6	6	6	6.0	-	7.7
RSTO	0	2	4	4	0	0	0	1	0	1	0	0	0	12	4	1	2.4	1.5	38.5
POSP	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
SOSP	0	2	2	3	0	0	0	2	0	0	0	0	3	12	3	2	2.4	0.5	38.5
DEJU	0	30	0	0	0	0	0	0	0	0	15	0	0	45	30	15	22.5	10.6	15.4
#TOT	0	56	126	134	108	3	39	66	378	26	169	313	239	1657	378	3	138.1	117.9	92.3

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh North Habitat for Autumn 1990

Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	16.7
GBHE	0	0	0	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	16.7
#DAB	0	0	3	0	17	0	12	4	55	17	12	3	123	55	3	15.4	17.0	66.7
GWTE	0	0	0	0	0	0	8	0	46	0	0	0	54	46	8	27.0	26.9	16.7
MALL	0	0	3	0	15	0	4	4	0	14	12	0	52	15	3	8.7	5.6	50.0
NOPI	0	0	0	0	0	0	0	0	6	0	0	0	6	6	6	6.0	-	8.3
GADW	0	0	0	0	2	0	0	0	3	0	0	3	8	3	2	2.7	0.6	25.0
AMWI	0	0	0	0	0	0	0	0	0	3	0	0	3	3	3	3.0	-	8.3
#DIV	0	0	0	0	0	0	0	1	2	0	0	90	93	90	1	31.0	51.1	25.0
SCAU	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80.0	-	8.3
COGO	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6.0	-	8.3
BAGO	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	8.3
BUFF	0	0	0	0	0	0	0	0	2	0	0	0	2	2	2	2.0	-	8.3
HOME	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	8.3
COME	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	8.3
RBME	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	8.3
#RAP	0	0	0	0	0	0	0	0	0	2	2	1	5	2	1	1.7	0.6	25.0
HAWK	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	8.3
BAEA	0	0	0	0	0	0	0	0	0	2	2	0	4	2	2	2.0	-	16.7
#GUL	0	0	0	0	13	0	0	0	0	0	13	22	48	22	13	16.0	5.2	25.0
BOGU	0	0	0	0	7	0	0	0	0	0	0	0	7	7	7	7.0	-	8.3
MEGU	0	0	0	0	4	0	0	0	0	0	8	22	34	22	4	11.3	9.5	25.0
RBGU	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	8.3
GWGU	0	0	0	0	0	0	0	0	0	0	5	0	5	5	5	5.0	-	8.3
#OWL	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	8.3
SEOW	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	8.3
BEKI	0	0	0	0	0	2	1	1	1	1	0	0	6	2	1	1.2	0.4	41.7
#WOO	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	8.3
NOFL	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	8.3
#PAS	0	0	0	22	20	0	33	0	7	6	25	84	197	84	6	28.1	26.4	58.3
NOCR	0	0	0	0	18	0	0	0	0	0	0	24	42	24	18	21.0	4.2	16.7
WIWR	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	8.3
AMDI	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	8.3
AMRO	0	0	0	6	0	0	0	0	0	0	0	0	6	6	6	6.0	-	8.3
NOSH	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	8.3
EUST	0	0	0	16	0	0	0	0	6	0	0	50	72	50	6	24.0	23.1	25.0
RSTO	0	0	0	0	0	0	0	0	1	0	2	0	3	2	1	1.5	0.7	16.7
SAVS	0	0	0	0	0	0	4	0	0	0	0	0	4	4	4	4.0	-	8.3
POSP	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	8.3
SOSP	0	0	0	0	2	0	3	0	0	0	6	0	11	6	2	3.7	2.1	25.0
GCSP	0	0	0	0	0	0	0	0	0	5	1	0	6	5	1	3.0	2.8	16.7
DEJU	0	0	0	0	0	0	20	0	0	0	15	8	43	20	8	14.3	6.0	25.0
HOFI	0	0	0	0	0	0	5	0	0	0	0	0	5	5	5	5.0	-	8.3
#TOT	0	0	3	22	51	3	47	6	65	27	52	200	476	200	3	47.6	58.1	83.3

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh North Habitat for Summer 1991

Date	02Jun	09Jun	17Jun	24Jun	22Jul	28Jul	04Aug	19Aug	25Aug	Total	Max	Min	Mean	SD	%Freq
#HER	7	1	3	0	0	0	0	0	0	11	7	1	3.7	3.1	33.3
GBHE	7	1	3	0	0	0	0	0	0	11	7	1	3.7	3.1	33.3
#GEE	0	10	0	0	0	0	0	0	0	10	10	10	10.0	-	11.1
CAGO	0	10	0	0	0	0	0	0	0	10	10	10	10.0	-	11.1
#RAP	0	2	0	0	1	0	0	0	0	3	2	1	1.5	0.7	22.2
BAEA	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	11.1
COHA	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	11.1
#SHO	4	0	0	2	0	0	0	0	0	6	4	2	3.0	1.4	22.2
KILL	4	0	0	2	0	0	0	0	0	6	4	2	3.0	1.4	22.2
BTPI	0	1	0	1	0	0	0	0	0	2	1	1	1.0	-	22.2
BEKI	0	1	2	2	2	0	0	1	0	8	2	1	1.6	0.5	55.6
#PAS	54	14	9	41	4	4	0	0	44	170	54	4	24.3	21.3	77.8
SWAL	0	6	0	0	0	0	0	0	0	6	6	6	6.0	-	11.1
BASW	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
NOCR	4	4	6	0	0	0	0	0	40	54	40	4	13.5	17.7	44.4
CORA	0	0	0	0	0	0	0	0	4	4	4	4	4.0	-	11.1
AMRO	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1
CEWA	0	0	3	0	0	0	0	0	0	3	3	3	3.0	-	11.1
EUST	50	0	0	40	0	0	0	0	0	90	50	40	45.0	7.1	22.2
SOSP	0	1	0	0	1	0	0	0	0	2	1	1	1.0	-	22.2
RWBL	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	11.1
HOFI	0	0	0	0	0	4	0	0	0	4	4	4	4.0	-	11.1
AMGO	0	0	0	0	3	0	0	0	0	3	3	3	3.0	-	11.1
#TOT	65	29	14	46	7	4	0	1	44	210	65	1	26.3	23.5	88.9

Fanny Bay - Little Bay Wetlands Bird Surveys of Freshwater Marsh Habitat for Autumn 1990

Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq
BEKI	0	0	1	0	0	0	0	0	0	0	1	0	2	1	1	1.0	-	16.7
#WOO	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
NOFL	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#PAS	0	3	0	1	1	0	1	0	2	0	0	0	8	3	1	1.6	0.9	41.7
STJA	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
WIWR	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	8.3
AMRO	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
SOSP	0	0	0	0	0	0	0	0	2	0	0	0	2	2	2	2.0	-	8.3
RWBL	0	3	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	-	8.3
#TOT	0	3	2	1	1	0	1	0	2	0	1	0	11	3	1	1.6	0.8	58.3

Fanny Bay - Little Bay Wetlands Bird Surveys of Freshwater Marsh Habitat for Winter 1990-1991

Date	03Dec	10Dec	16Dec	23Dec	31Dec	08Jan	13Jan	20Jan	28Jan	04Feb	10Feb	17Feb	25Feb	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	0	0	0	0	0	0	1	1	0	0	2	1	1	1.0	-	15.4
GBHE	0	0	0	0	0	0	0	0	0	1	1	0	0	2	1	1	1.0	-	15.4
#DIV	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
BUFF	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
#RAP	0	0	0	1	0	0	1	0	0	0	0	0	0	2	1	1	1.0	-	15.4
RTHA	0	0	0	1	0	0	1	0	0	0	0	0	0	2	1	1	1.0	-	15.4
#WOO	0	0	0	2	0	0	0	0	0	0	0	1	0	3	2	1	1.5	0.7	15.4
RBSA	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
HAWO	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	7.7
#PAS	0	0	0	33	0	0	0	5	15	0	29	7	0	89	33	5	17.8	12.7	38.5
STJA	0	0	0	0	0	0	0	2	2	0	3	0	0	7	3	2	2.3	0.6	23.1
NOCR	0	0	0	0	0	0	0	0	2	0	0	1	0	3	2	1	1.5	0.7	15.4
BEWR	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	7.7
EUST	0	0	0	12	0	0	0	0	8	0	0	0	0	20	12	8	10.0	2.8	15.4
SOSP	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	7.7
DEJU	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6	6	6.0	-	7.7
RWBL	0	0	0	21	0	0	0	3	2	0	0	0	0	26	21	2	8.7	10.7	23.1
PASS	0	0	0	0	0	0	0	0	0	0	25	0	0	25	25	25	25.0	-	7.7
#TOT	0	0	0	36	0	0	1	6	15	1	30	8	0	97	36	1	13.9	14.0	53.8

Fanny Bay - Little Bay Wetlands Bird Surveys of Freshwater Marsh Habitat for Spring 1991

Date	04Mar	10Mar	17Mar	25Mar	01Apr	07Apr	14Apr	21Apr	29Apr	05May	12May	19May	27May	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	1	1	0	1	0	0	0	0	0	0	0	3	1	1	1.0	-	23.1
GBHE	0	0	1	1	0	1	0	0	0	0	0	0	0	3	1	1	1.0	-	23.1
#DAB	0	0	0	2	0	2	0	0	0	0	0	0	0	4	2	2	2.0	-	15.4
WODU	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
MALL	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
#RAP	0	0	1	4	0	0	0	0	2	0	0	0	0	7	4	1	2.3	1.5	23.1
HAWK	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
BAEA	0	0	0	4	0	0	0	0	2	0	0	0	0	6	4	2	3.0	1.4	15.4
#GUL	0	0	0	0	0	0	0	0	30	0	0	0	0	30	30	30	30.0	-	7.7
GULL	0	0	0	0	0	0	0	0	30	0	0	0	0	30	30	30	30.0	-	7.7
BEKI	0	0	0	0	0	0	0	1	0	0	1	0	0	2	1	1	1.0	-	15.4
#WOO	0	1	0	0	1	0	0	0	0	0	0	0	0	2	1	1	1.0	-	15.4
WOPE	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
NOFL	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#PAS	0	18	12	10	6	12	17	8	19	0	10	8	12	132	19	6	12.0	4.3	84.6
SWAL	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4.0	-	7.7
VGSW	0	0	0	0	0	0	0	0	2	0	4	2	0	8	4	2	2.7	1.2	23.1
BASW	0	0	0	0	0	0	0	2	2	0	0	0	2	6	2	2	2.0	-	23.1
STJA	0	3	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	-	7.7
NOCR	0	4	0	0	0	6	0	0	5	0	0	0	0	15	6	4	5.0	1.0	23.1
CORA	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	7.7
AMRO	0	6	0	6	0	0	0	0	2	0	0	0	0	14	6	2	4.7	2.3	23.1
EUST	0	0	6	0	0	0	0	0	0	0	0	0	0	6	6	6	6.0	-	7.7
COYE	0	0	0	0	0	0	0	2	1	0	1	0	0	4	2	1	1.3	0.6	23.1
RSTO	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
SPAR	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	-	7.7
SOSP	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
RWBL	0	1	6	4	6	6	15	4	6	0	5	6	6	65	15	1	5.9	3.4	84.6
#TOT	0	19	14	17	7	15	17	9	51	0	11	8	12	180	51	7	16.4	12.1	84.6

Bird Surveys of Freshwater Marsh Habitat for Summer 1991

Date	02Jun	09Jun	17Jun	24Jun	22Jul	28Jul	04Aug	19Aug	25Aug	Total	Max	Min	Mean	SD	%Freq
#DAB	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
WODU	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
#WOO	0	1	0	1	0	0	0	0	0	2	1	1	1.0	-	22.2
WOPE	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
PIWO	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1
#PAS	12	7	4	7	0	0	0	0	1	31	12	1	6.2	4.1	55.6
SWAL	4	0	0	0	0	0	0	0	0	4	4	4	4.0	-	11.1
BASW	2	0	0	0	0	0	0	0	0	2	2	2	2.0	-	11.1
AMRO	2	0	0	0	0	0	0	0	0	2	2	2	2.0	-	11.1
REVI	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1
COYE	0	1	0	1	0	0	0	0	1	3	1	1	1.0	-	33.3
SOSP	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1
RWBL	4	6	0	4	0	0	0	0	0	14	6	4	4.7	1.2	33.3
AMGO	0	0	4	0	0	0	0	0	0	4	4	4	4.0	-	11.1
#TOT	12	8	4	8	0	0	0	0	2	34	12	2	6.8	3.9	55.6

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh East Habitat for Autumn 1990

Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	1	1	0	0	1	1	0	0	1	3	8	3	1	1.3	0.8	50.0
GBHE	0	0	1	1	0	0	1	1	0	0	1	3	8	3	1	1.3	0.8	50.0
#DAB	22	45	23	18	40	23	7	119	152	102	0	150	701	152	7	63.7	55.7	91.7
DABL	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
GWTE	20	30	20	18	40	18	7	104	150	90	0	150	647	150	7	58.8	54.6	91.7
MALL	0	0	0	0	0	5	0	0	0	4	0	0	9	5	4	4.5	0.7	16.7
NOPI	1	11	2	0	0	0	0	12	2	0	0	0	28	12	1	5.6	5.4	41.7
NOSL	1	3	1	0	0	0	0	1	0	0	0	0	6	3	1	1.5	1.0	33.3
AMWI	0	0	0	0	0	0	0	2	0	8	0	0	10	8	2	5.0	4.2	16.7
#DIV	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	8.3
HOME	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	8.3
#RAP	1	0	0	0	4	1	1	1	1	1	0	1	11	4	1	1.4	1.1	66.7
HAWK	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	8.3
BAEA	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	8.3
NOHA	0	0	0	0	0	0	0	0	1	1	0	1	3	1	1	1.0	-	25.0
SSHA	0	0	0	0	4	0	0	0	0	0	0	0	4	4	4	4.0	-	8.3
RTHA	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	8.3
MERL	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#SHO	2	5	9	5	0	5	5	1	0	0	0	0	32	9	1	4.6	2.6	58.3
KILL	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	8.3
GRYE	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	8.3
PESA	0	5	1	0	0	0	0	0	0	0	0	0	6	5	1	3.0	2.8	16.7
DOWI	2	0	6	5	0	0	5	0	0	0	0	0	18	6	2	4.5	1.7	33.3
SHOR	0	0	0	0	0	5	0	0	0	0	0	0	5	5	5	5.0	-	8.3
BEKI	0	0	0	0	1	0	0	1	0	0	0	0	2	1	1	1.0	-	16.7
#WOO	0	0	0	8	0	0	0	0	0	0	0	0	8	8	8	8.0	-	8.3
NOFL	0	0	0	8	0	0	0	0	0	0	0	0	8	8	8	8.0	-	8.3
#PAS	11	53	22	20	5	15	6	106	18	10	34	2	302	106	2	25.2	29.1	100.0
STJA	0	0	0	0	0	0	5	0	0	0	0	0	5	5	5	5.0	-	8.3
NOCR	0	12	0	0	0	0	0	7	0	0	0	0	19	12	7	9.5	3.5	16.7
BUSH	0	0	0	0	0	0	0	18	0	0	0	0	18	18	18	18.0	-	8.3
RBNU	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
BEWR	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
HOWR	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	8.3
WIWR	0	0	0	0	0	0	1	2	0	1	1	0	5	2	1	1.3	0.5	33.3
CCKI	0	0	0	0	0	0	0	6	0	0	0	0	6	6	6	6.0	-	8.3
RCKI	0	1	0	0	0	0	0	1	0	0	0	0	2	1	1	1.0	-	16.7
AMRO	0	0	3	4	0	0	0	0	0	0	0	0	7	4	3	3.5	0.7	16.7
NOSH	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	8.3
EUST	0	0	0	0	0	0	0	50	0	0	6	0	56	50	6	28.0	31.1	16.7
WARB	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
RSTO	2	2	0	1	2	1	0	1	3	0	0	0	12	3	1	1.7	0.8	58.3
SAVS	8	20	12	0	0	5	0	0	0	0	0	0	45	20	5	11.3	6.5	33.3
POSP	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	8.3
SOSP	0	1	2	1	3	3	0	3	4	2	2	2	23	4	1	2.3	0.9	83.3
GCSP	0	0	0	0	0	5	0	0	5	3	0	0	13	5	3	4.3	1.2	25.0
WCSP	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	8.3
DEJU	0	0	0	2	0	0	0	16	3	3	25	0	49	25	2	9.8	10.3	41.7
HOFI	0	5	4	11	0	0	0	1	2	0	0	0	23	11	1	4.6	3.9	41.7
AMGO	0	12	0	0	0	0	0	0	0	0	0	0	12	12	12	12.0	-	8.3
#TOT	36	103	55	52	50	44	20	229	171	113	35	158	1066	229	20	88.8	66.3	100.0

Panny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh East Habitat for Winter 1990-1991

Date	03Dec	10Dec	16Dec	23Dec	31Dec	08Jan	13Jan	20Jan	28Jan	04Feb	10Feb	17Feb	25Feb	Total	Max	Min	Mean	SD	%Freq
n																			
#HER	0	3	1	0	0	0	0	0	0	1	0	2	0	7	3	1	1.8	1.0	30.8
GBHE	0	3	1	0	0	0	0	0	0	1	0	2	0	7	3	1	1.8	1.0	30.8
#SWA	0	0	0	0	0	3	2	0	0	1	0	0	0	6	3	1	2.0	1.0	23.1
TRUS	0	0	0	0	0	3	2	0	0	1	0	0	0	6	3	1	2.0	1.0	23.1
#GEE	0	0	0	0	0	0	0	0	0	20	0	0	0	20	20	20	20.0	-	7.7
CAGO	0	0	0	0	0	0	0	0	0	20	0	0	0	20	20	20	20.0	-	7.7
#DAB	104	126	0	165	178	150	133	69	4	28	0	0	0	957	178	4	106.3	60.8	69.2
DABL	0	0	0	0	0	150	0	0	0	0	0	0	0	150	150	150	150.0	-	7.7
WODU	0	0	0	0	0	0	0	0	0	6	0	0	0	6	6	6	6.0	-	7.7
GWTE	100	121	0	100	43	0	30	40	0	0	0	0	0	434	121	30	72.3	39.0	46.2
MALL	4	3	0	40	82	0	25	25	4	20	0	0	0	203	82	3	25.4	26.4	61.5
NOPI	0	0	0	15	8	0	15	4	0	0	0	0	0	42	15	4	10.5	5.4	30.8
GADW	0	0	0	0	0	0	3	0	0	0	0	0	0	3	3	3	3.0	-	7.7
AMWI	0	2	0	10	45	0	60	0	0	2	0	0	0	119	60	2	23.8	26.9	38.5
#DIV	6	1	0	0	0	0	0	0	0	0	0	0	0	7	6	1	3.5	3.5	15.4
BUFF	6	1	0	0	0	0	0	0	0	0	0	0	0	7	6	1	3.5	3.5	15.4
#RAP	0	0	0	0	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	15.4
NOHA	0	0	0	0	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	15.4
#SHO	161	0	0	0	0	0	1	0	0	0	0	0	1	163	161	1	54.3	92.4	23.1
KILL	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	7.7
GRYE	1	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	1.0	-	15.4
DUNL	160	0	0	0	0	0	0	0	0	0	0	0	0	160	160	160	160.0	-	7.7
#GUL	29	0	0	0	0	0	0	0	0	58	0	0	0	87	58	29	43.5	20.5	15.4
GULL	29	0	0	0	0	0	0	0	0	58	0	0	0	87	58	29	43.5	20.5	15.4
#PAS	68	8	6	0	5	6	0	15	2	40	5	0	70	225	70	2	22.5	26.8	76.9
NOCR	18	0	0	0	0	0	0	0	0	40	0	0	8	66	40	8	22.0	16.4	23.1
WIWR	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
RCKI	0	1	1	0	0	0	0	0	0	0	0	0	0	2	1	1	1.0	-	15.4
AMRO	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	5.0	-	7.7
EUST	50	2	0	0	0	0	0	0	0	0	0	0	39	91	50	2	30.3	25.1	23.1
RSTO	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
SPAR	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
FOSP	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
SOSP	0	2	5	0	2	4	0	6	2	0	0	0	2	23	6	2	3.3	1.7	53.8
DEJU	0	0	0	0	2	2	0	0	0	0	5	0	10	19	10	2	4.8	3.8	30.8
FINC	0	0	0	0	0	0	0	8	0	0	0	0	6	14	8	6	7.0	1.4	15.4
#TOT	368	138	7	165	183	160	137	84	6	148	5	2	71	1474	368	2	113.4	102.7	100.0

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh East Habitat for Spring 1991

Date	04Mar	10Mar	17Mar	25Mar	01Apr	07Apr	14Apr	21Apr	29Apr	05May	12May	19May	27May	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	7.7
GBHE	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#GEE	0	0	2	0	0	0	0	1	2	0	0	0	0	5	2	1	1.7	0.6	23.1
CAGO	0	0	2	0	0	0	0	1	2	0	0	0	0	5	2	1	1.7	0.6	23.1
#DAB	150	28	45	1	7	0	8	6	2	0	0	0	0	247	150	1	30.9	50.5	61.5
DABL	150	0	45	0	0	0	0	0	0	0	0	0	0	195	150	45	97.5	74.2	15.4
GWTE	0	13	0	0	7	0	0	6	2	0	0	0	0	28	13	2	7.0	4.5	30.8
TEAL	0	4	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	-	7.7
MALL	0	10	0	1	0	0	8	0	0	0	0	0	0	19	10	1	6.3	4.7	23.1
NOPI	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#SHO	0	0	0	0	0	1	0	0	1	200	1	0	0	203	200	1	50.8	99.5	30.8
KILL	0	0	0	0	0	1	0	0	1	0	0	0	0	2	1	1	1.0	-	15.4
COSN	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	7.7
SHOR	0	0	0	0	0	0	0	0	0	200	0	0	0	200	200	200	200.0	-	7.7
BEKI	0	0	0	0	0	1	0	1	0	0	0	0	0	2	1	1	1.0	-	15.4
#PAS	34	0	14	0	13	26	10	3	15	14	12	36	41	218	41	3	19.8	12.4	84.6
VGSW	0	0	0	0	0	1	3	0	0	6	4	4	3	21	6	1	3.5	1.6	46.2
BASW	0	0	0	0	0	0	0	0	0	1	0	2	0	3	2	1	1.5	0.7	15.4
RCKI	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
AMRO	4	0	4	0	2	3	6	0	4	0	2	0	0	25	6	2	3.6	1.4	53.8
EUST	30	0	0	0	4	10	0	0	9	0	0	25	30	108	30	4	18.0	11.6	46.2
WARB	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
OCWA	0	0	0	0	0	0	0	0	0	1	0	1	0	2	1	1	1.0	-	15.4
COYE	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	7.7
SAVS	0	0	0	0	0	1	1	1	0	0	0	0	0	3	1	1	1.0	-	23.1
FOSP	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
SOSP	0	0	2	0	4	5	0	0	0	0	3	0	0	14	5	2	3.5	1.3	30.8
GCSP	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	7.7
WCSP	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	7.7
BRBL	0	0	0	0	0	0	0	1	1	0	0	0	0	2	1	1	1.0	-	15.4
HOFI	0	0	8	0	2	5	0	0	0	3	3	0	2	23	8	2	3.8	2.3	46.2
PISI	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	7.7
AMGO	0	0	0	0	0	0	0	0	0	0	0	4	6	10	6	4	5.0	1.4	15.4
#TOT	184	28	61	1	20	28	19	11	20	214	13	36	41	676	214	1	52.0	67.2	100.0

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh East Habitat for Summer 1991

Date	02Jun	09Jun	17Jun	24Jun	22Jul	28Jul	04Aug	19Aug	25Aug	Total	Max	Min	Mean	SD	%Freq
#SHO	0	0	0	0	0	0	0	0	30	30	30	30	30.0	-	11.1
SHOR	0	0	0	0	0	0	0	0	30	30	30	30	30.0	-	11.1
CATE	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1
BTPI	0	0	0	0	0	0	0	0	4	4	4	4	4.0	-	11.1
HUMM	0	0	0	2	0	0	0	0	0	2	2	2	2.0	-	11.1
BEKI	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
#PAS	45	9	12	17	3	13	26	2	4	131	45	2	14.6	13.7	100.0
SWAL	8	4	6	6	0	0	0	0	0	24	8	4	6.0	1.6	44.4
TRSW	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
VGSW	1	0	0	2	0	2	0	0	0	5	2	1	1.7	0.6	33.3
BASW	1	1	4	2	0	2	13	0	0	23	13	1	3.8	4.6	66.7
CBCH	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	11.1
BEWR	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	11.1
AMRO	0	0	0	3	0	0	0	0	0	3	3	3	3.0	-	11.1
EUST	30	0	0	0	0	0	2	0	0	32	30	2	16.0	19.8	22.2
YEWA	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
YRWA	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
COYE	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
SOSP	1	2	1	0	0	0	0	1	2	7	2	1	1.4	0.5	55.6
RWBL	1	1	0	0	0	4	4	0	0	10	4	1	2.5	1.7	44.4
BHCO	0	0	0	2	0	0	0	0	0	2	2	2	2.0	-	11.1
PUFI	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	11.1
HOFI	0	0	0	2	3	5	4	0	0	14	5	2	3.5	1.3	44.4
AMGO	0	0	0	0	0	0	3	0	0	3	3	3	3.0	-	11.1
#TOT	45	9	12	20	3	13	26	2	39	169	45	2	18.8	15.2	100.0

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh South Habitat for Autumn 1990

Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq
#HER	0	3	1	5	1	0	2	0	0	0	1	0	13	5	1	2.2	1.6	50.0
GBHE	0	3	1	5	1	0	2	0	0	0	1	0	13	5	1	2.2	1.6	50.0
#DAB	0	6	0	0	7	4	14	0	21	0	58	23	133	58	4	19.0	18.7	58.3
GWTE	0	0	0	0	2	0	0	0	0	0	7	10	19	10	2	6.3	4.0	25.0
TEAL	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	-	8.3
MALL	0	5	0	0	5	2	14	0	15	0	35	5	81	35	2	11.6	11.5	58.3
NOSL	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
EUWI	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	8.3
AMWI	0	0	0	0	0	0	0	0	6	0	15	8	29	15	6	9.7	4.7	25.0
#DIV	0	0	0	0	1	1	0	0	11	0	2	4	19	11	1	3.8	4.2	41.7
BAGO	0	0	0	0	0	0	0	0	6	0	0	0	6	6	6	6.0	-	8.3
BUFF	0	0	0	0	0	0	0	0	2	0	0	4	6	4	2	3.0	1.4	16.7
HOME	0	0	0	0	1	1	0	0	3	0	2	0	7	3	1	1.8	1.0	33.3
#RAP	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
HAWK	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#SHO	0	0	1	0	5	0	0	0	0	0	6	2	14	6	1	3.5	2.4	33.3
KILL	0	0	1	0	0	0	0	0	0	0	6	2	9	6	1	3.0	2.6	25.0
PESA	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	8.3
DOWI	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	8.3
SHOR	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#GUL	9	0	0	0	0	0	0	0	0	0	0	0	9	9	9	9.0	-	8.3
BOGU	9	0	0	0	0	0	0	0	0	0	0	0	9	9	9	9.0	-	8.3
RUHU	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
BEKI	0	0	0	0	0	0	0	0	0	0	1	1	2	1	1	1.0	-	16.7
#WOO	4	1	0	1	0	0	1	0	0	0	0	1	8	4	1	1.6	1.3	41.7
NOFL	4	0	0	1	0	0	1	0	0	0	0	1	7	4	1	1.8	1.5	33.3
PIWO	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#PAS	19	10	0	21	18	0	1	0	0	0	16	0	85	21	1	14.2	7.5	50.0
NOCR	0	0	0	0	15	0	0	0	0	0	15	0	30	15	15	15.0	-	16.7
CBCH	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
RBNU	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	8.3
AMRO	5	3	0	1	0	0	0	0	0	0	0	0	9	5	1	3.0	2.0	25.0
EUST	0	0	0	20	0	0	0	0	0	0	0	0	20	20	20	20.0	-	8.3
SOVI	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
OCWA	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
COYE	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
SAVS	3	5	0	0	0	0	0	0	0	0	0	0	8	5	3	4.0	1.4	16.7
SOSP	5	2	0	0	3	0	1	0	0	0	1	0	12	5	1	2.4	1.7	41.7
#TOT	32	21	2	27	33	5	18	0	32	0	84	31	285	84	2	28.5	22.5	83.3

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh South Habitat for Winter 1990-1991

Date	03Dec	10Dec	16Dec	23Dec	31Dec	08Jan	13Jan	20Jan	28Jan	04Feb	10Feb	17Feb	25Feb	Total	Max	Min	Mean	SD	%Freq
#HER	0	1	0	0	0	0	0	0	0	0	1	0	0	2	1	1	1.0	-	15.4
GBHE	0	1	0	0	0	0	0	0	0	0	1	0	0	2	1	1	1.0	-	15.4
#DAB	0	18	25	35	84	27	46	26	19	0	19	18	9	326	84	9	29.6	20.5	84.6
DABL	0	0	0	0	0	0	0	0	5	0	0	0	0	5	5	5	5.0	-	7.7
GWTE	0	6	0	6	10	15	0	0	8	0	6	0	0	51	15	6	8.5	3.6	46.2
MALL	0	8	18	25	60	12	26	20	6	0	11	18	9	213	60	6	19.4	15.1	84.6
NOPI	0	0	0	0	3	0	0	0	0	0	0	0	0	3	3	3	3.0	-	7.7
AMWI	0	4	7	4	11	0	20	6	0	0	2	0	0	54	20	2	7.7	6.1	53.8
#DIV	32	0	0	0	0	0	0	7	0	0	0	1	0	40	32	1	13.3	16.4	23.1
SCAU	30	0	0	0	0	0	0	0	0	0	0	0	0	30	30	30	30.0	-	7.7
BLSC	0	0	0	0	0	0	0	6	0	0	0	0	0	6	6	6	6.0	-	7.7
BUFF	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
HOME	0	0	0	0	0	0	0	1	0	0	0	1	0	2	1	1	1.0	-	15.4
#RAP	0	1	0	0	0	0	0	0	1	0	0	0	0	2	1	1	1.0	-	15.4
BAEA	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
MERL	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	7.7
#SHO	0	0	0	1	3	4	2	0	8	0	4	3	2	27	8	1	3.4	2.1	61.5
KILL	0	0	0	1	1	0	2	0	8	0	0	3	0	15	8	1	3.0	2.9	38.5
GRYE	0	0	0	0	2	0	0	0	0	0	4	0	0	6	4	2	3.0	1.4	15.4
DUNL	0	0	0	0	0	4	0	0	0	0	0	0	2	6	4	2	3.0	1.4	15.4
#GUL	2	1	1	0	11	2	1	0	0	0	0	1	5	24	11	1	3.0	3.5	61.5
GULL	2	0	0	0	11	2	1	0	0	0	0	1	5	22	11	1	3.7	3.9	46.2
GWGU	0	1	1	0	0	0	0	0	0	0	0	0	0	2	1	1	1.0	-	15.4
#WOO	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	7.7
NOFL	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	7.7
#PAS	0	0	1	10	12	0	1	8	0	0	0	2	9	43	12	1	6.1	4.7	53.8
STJA	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	7.7
NOCR	0	0	0	0	8	0	0	6	0	0	0	0	0	14	8	6	7.0	1.4	15.4
EUST	0	0	0	0	4	0	1	0	0	0	0	0	4	9	4	1	3.0	1.7	23.1
SOSP	0	0	1	4	0	0	0	0	0	0	0	1	0	6	4	1	2.0	1.7	23.1
DEJU	0	0	0	6	0	0	0	0	0	0	0	0	5	11	6	5	5.5	0.7	15.4
RWBL	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
BRBL	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
#TOT	34	21	27	46	110	33	50	41	28	0	24	25	27	466	110	21	38.8	24.2	92.3

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh South Habitat for Spring 1991

Date	04Mar	10Mar	17Mar	25Mar	01Apr	07Apr	14Apr	21Apr	29Apr	05May	12May	19May	27May	Total	Max	Min	Mean	SD	%Freq
#HER	1	0	1	0	0	0	0	0	2	1	1	0	1	7	2	1	1.2	0.4	46.2
GBHE	1	0	1	0	0	0	0	0	2	1	1	0	1	7	2	1	1.2	0.4	46.2
#GEE	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	2.0	-	7.7
CAGO	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	2.0	-	7.7
#DAB	22	14	24	0	28	27	14	0	9	2	0	0	0	140	28	2	17.5	9.3	61.5
WODU	0	0	6	0	0	0	0	0	0	0	0	0	0	6	6	6	6.0	-	7.7
GWTE	18	0	0	0	17	10	2	0	9	0	0	0	0	56	18	2	11.2	6.5	38.5
MALL	0	14	18	0	11	6	12	0	0	2	0	0	0	63	18	2	10.5	5.7	46.2
AMWI	4	0	0	0	0	11	0	0	0	0	0	0	0	15	11	4	7.5	4.9	15.4
#DIV	1	0	0	0	20	2	0	0	0	0	0	0	0	23	20	1	7.7	10.7	23.1
GRSC	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
COME	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
DUCK	0	0	0	0	20	0	0	0	0	0	0	0	0	20	20	20	20.0	-	7.7
#RAP	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	2	2.0	-	7.7
OSPR	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	2	2.0	-	7.7
#SHO	19	4	2	0	0	4	1	2	0	0	0	0	0	32	19	1	5.3	6.8	46.2
KILL	8	0	2	0	0	1	1	0	0	0	0	0	0	12	8	1	3.0	3.4	30.8
GRYE	2	1	0	0	0	3	0	1	0	0	0	0	0	7	3	1	1.8	1.0	30.8
YELL	4	3	0	0	0	0	0	1	0	0	0	0	0	8	4	1	2.7	1.5	23.1
DUNL	5	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5.0	-	7.7
#GUL	2	11	0	0	0	6	13	18	2	9	0	0	0	61	18	2	8.7	5.9	53.8
GULL	0	11	0	0	0	0	0	0	0	1	0	0	0	12	11	1	6.0	7.1	15.4
BOGU	0	0	0	0	0	0	3	14	2	8	0	0	0	27	14	2	6.8	5.5	30.8
MEGU	2	0	0	0	0	6	10	4	0	0	0	0	0	22	10	2	5.5	3.4	30.8
#WOO	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	7.7
PIWO	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	7.7
#PAS	17	1	0	0	1	4	4	10	3	18	0	1	5	64	18	1	6.4	6.4	76.9
VGSW	0	0	0	0	0	0	0	7	0	0	0	0	0	7	7	7	7.0	-	7.7
NOCR	7	0	0	0	0	0	0	0	0	0	0	0	2	9	7	2	4.5	3.5	15.4
AMRO	10	0	0	0	0	0	0	0	2	2	0	0	2	16	10	2	4.0	4.0	30.8
EUST	0	0	0	0	0	0	2	0	0	12	0	0	0	14	12	2	7.0	7.1	15.4
SOSP	0	1	0	0	0	2	2	2	0	1	0	1	1	10	2	1	1.4	0.5	53.8
RWBL	0	0	0	0	1	2	0	1	1	1	0	0	0	6	2	1	1.2	0.4	38.5
AMGO	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	2	2.0	-	7.7
#TOT	62	30	27	0	49	43	32	32	18	30	1	2	6	332	62	1	27.7	18.7	92.3

Fanny Bay - Little Bay Wetlands Bird Surveys of Intertidal Marsh South Habitat for Summer 1991

Date	02Jun	09Jun	17Jun	24Jun	22Jul	28Jul	04Aug	19Aug	25Aug	Total	Max	Min	Mean	SD	%Freq
#HER	1	0	1	0	0	0	0	0	0	2	1	1	1.0	-	22.2
GBHE	1	0	1	0	0	0	0	0	0	2	1	1	1.0	-	22.2
#GUL	0	0	0	0	0	0	2	2	4	8	4	2	2.7	1.2	33.3
GULL	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
BOGU	0	0	0	0	0	0	2	2	3	7	3	2	2.3	0.6	33.3
BEKI	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	11.1
#PAS	8	8	6	0	1	0	0	0	6	29	8	1	5.8	2.9	55.6
VGSW	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	11.1
NOCR	7	7	6	0	0	0	0	0	0	20	7	6	6.7	0.6	33.3
AMRO	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
SOSP	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
AMGO	0	0	0	0	0	0	0	0	6	6	6	6	6.0	-	11.1
#TOT	9	8	7	0	2	0	2	2	10	40	10	2	5.7	3.6	77.8

Fanny Bay - Little Bay Wetlands Bird Surveys of Forest Habitat for Autumn 1990

Date	10Sep	17Sep	23Sep	30Sep	08Oct	15Oct	22Oct	28Oct	05Nov	12Nov	18Nov	25Nov	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	1	0	0	0	0	0	0	0	1	2	1	1	1.0	-	16.7
GBHE	0	0	0	1	0	0	0	0	0	0	0	1	2	1	1	1.0	-	16.7
#DIV	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	-	8.3
HOME	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	-	8.3
#RAP	0	4	1	0	0	0	0	0	1	3	1	0	10	4	1	2.0	1.4	41.7
TUVU	0	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	8.3
BAEA	0	0	0	0	0	0	0	0	1	2	0	0	3	2	1	1.5	0.7	16.7
RTHA	0	1	1	0	0	0	0	0	0	0	1	0	3	1	1	1.0	-	25.0
MERL	0	1	0	0	0	0	0	0	0	1	0	0	2	1	1	1.0	-	16.7
RUGR	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	8.3
#GUL	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	8.3
GWGU	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	8.3
BEKI	0	2	2	0	0	1	4	0	0	1	0	1	11	4	1	1.8	1.2	50.0
#WOO	0	2	3	1	2	1	0	0	0	0	2	1	12	3	1	1.7	0.8	58.3
RBSA	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
DOWO	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
HAWO	0	0	1	1	1	0	0	0	0	0	1	0	4	1	1	1.0	-	33.3
NOFL	0	1	2	0	0	1	0	0	0	0	1	1	6	2	1	1.2	0.4	41.7
#PAS	44	91	63	77	93	46	27	23	58	3	12	15	552	93	3	46.0	30.9	100.0
STJA	2	2	7	7	9	3	4	0	0	0	1	1	36	9	1	4.0	3.0	75.0
NOCR	0	0	22	35	0	0	0	0	0	0	0	0	57	35	22	28.5	9.2	16.7
CORA	0	2	1	0	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	16.7
CBCH	2	0	2	6	7	8	7	2	4	0	4	5	47	8	2	4.7	2.3	83.3
BUSH	0	0	0	0	12	10	0	0	0	0	0	0	22	12	10	11.0	1.4	16.7
RBNU	1	0	3	0	4	0	3	0	0	0	0	0	11	4	1	2.8	1.3	33.3
BEWR	1	2	1	0	0	0	0	0	0	1	0	0	5	2	1	1.3	0.5	33.3
WIWR	2	1	3	3	1	2	2	3	5	1	1	3	27	5	1	2.3	1.2	100.0
AMDI	0	0	0	0	0	0	0	0	0	0	1	1	2	1	1	1.0	-	16.7
GCKI	0	0	9	6	6	6	0	12	20	0	2	0	61	20	2	8.7	5.9	58.3
RCKI	0	0	0	0	0	0	0	2	4	0	0	0	6	4	2	3.0	1.4	16.7
AMRO	0	7	3	0	21	1	2	0	0	0	0	0	34	21	1	6.8	8.3	41.7
VATH	0	0	0	0	1	1	1	0	0	0	0	1	4	1	1	1.0	-	33.3
CEWA	8	60	0	0	0	0	0	0	0	0	0	0	68	60	8	34.0	36.8	16.7
EUST	20	0	3	0	0	0	0	0	0	0	0	0	23	20	3	11.5	12.0	16.7
HUVI	0	1	1	0	0	0	0	0	0	0	0	0	2	1	1	1.0	-	16.7
YBWA	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	8.3
RSTO	0	2	3	3	5	3	4	2	6	1	1	2	32	6	1	2.9	1.6	91.7
SAVS	0	12	0	0	0	0	0	0	0	0	0	0	12	12	12	12.0	-	8.3
SOSP	0	1	3	2	7	5	1	2	0	0	2	2	25	7	1	2.8	2.0	75.0
GCSP	0	1	1	2	0	0	0	0	0	0	0	0	4	2	1	1.3	0.6	25.0
DEJU	0	0	0	10	20	7	0	0	18	0	0	0	55	20	7	13.8	6.2	33.3
FINC	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	8.3
PUFI	0	0	0	3	0	0	0	0	0	0	0	0	3	3	3	3.0	-	8.3
HOFI	0	0	0	0	0	0	3	0	0	0	0	0	3	3	3	3.0	-	8.3
RECR	8	0	0	0	0	0	0	0	0	0	0	0	8	8	8	8.0	-	8.3
#TOT	44	99	69	79	95	49	31	26	59	7	15	19	592	99	7	49.3	31.2	100.0

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Date	03Dec	10Dec	16Dec	23Dec	31Dec	08Jan	13Jan	20Jan	28Jan	04Feb	10Feb	17Feb	25Feb	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
GBHE	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
#DAB	0	0	0	4	0	0	0	2	0	0	0	0	0	6	4	2	3.0	1.4	15.4
GWTE	0	0	0	4	0	0	0	2	0	0	0	0	0	6	4	2	3.0	1.4	15.4
#DIV	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	7.7
BUFF	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	7.7
#RAP	0	2	1	5	2	0	5	0	1	0	0	0	0	16	5	1	2.7	1.9	46.2
BAEA	0	1	0	5	2	0	5	0	1	0	0	0	0	14	5	1	2.8	2.0	38.5
RTHA	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
MERL	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#GUL	0	0	2	3	4	1	1	0	0	0	0	0	0	11	4	1	2.2	1.3	38.5
GULL	0	0	0	0	4	1	1	0	0	0	0	0	0	6	4	1	2.0	1.7	23.1
GWGU	0	0	2	3	0	0	0	0	0	0	0	0	0	5	3	2	2.5	0.7	15.4
RODO	0	0	12	0	0	0	0	0	0	0	0	0	0	12	12	12	12.0	-	7.7
BEKI	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#WOO	0	2	0	0	0	0	0	0	0	0	0	0	3	5	3	2	2.5	0.7	15.4
NOFL	0	1	0	0	0	0	0	0	0	0	0	0	3	4	3	1	2.0	1.4	15.4
PIWO	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#PAS	0	17	39	54	4	3	10	18	18	0	17	16	32	228	54	3	20.7	15.3	84.6
STJA	0	0	0	5	0	0	0	1	5	0	0	0	1	12	5	1	3.0	2.3	30.8
CORA	0	0	0	0	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	15.4
CBCH	0	1	0	2	0	0	2	0	0	0	5	0	3	13	5	1	2.6	1.5	38.5
RBNU	0	0	0	1	0	0	1	1	0	0	0	0	1	4	1	1	1.0	-	30.8
BEWR	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	7.7
WIWR	0	4	2	4	1	0	0	0	1	0	0	1	1	14	4	1	2.0	1.4	53.8
AMDI	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
GCKI	0	8	10	6	0	0	0	3	3	0	1	0	3	34	10	1	4.9	3.2	53.8
AMRO	0	0	0	0	0	0	0	2	0	0	0	7	10	19	10	2	6.3	4.0	23.1
VATH	0	0	2	0	0	0	0	0	0	0	0	2	0	4	2	2	2.0	-	15.4
EUST	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	2	2.0	-	7.7
HUVI	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	7.7
RSTO	0	2	2	2	0	0	0	0	2	0	2	0	0	10	2	2	2.0	-	38.5
FOSP	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
SOSP	0	0	3	2	2	1	0	0	1	0	2	2	1	14	3	1	1.8	0.7	61.5
DEJU	0	0	20	32	0	0	6	3	6	0	5	4	7	83	32	3	10.4	10.2	61.5
RWBL	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3.0	-	7.7
PUFI	0	2	0	0	0	0	0	0	0	0	1	0	1	4	2	1	1.3	0.6	23.1
RECR	0	0	0	0	0	0	0	6	0	0	0	0	0	6	6	6	6.0	-	7.7
#TOT	0	21	54	67	10	4	16	21	19	0	17	16	36	281	67	4	25.5	19.2	84.6

Fanny Bay - Little Bay Wetlands Bird Surveys of Forest Habitat for Spring 1991

Date	04Mar	10Mar	17Mar	25Mar	01Apr	07Apr	14Apr	21Apr	29Apr	05May	12May	19May	27May	Total	Max	Min	Mean	SD	%Freq
#DAB	0	2	0	0	0	0	0	0	0	2	0	0	0	4	2	2	2.0	-	15.4
MALL	0	2	0	0	0	0	0	0	0	2	0	0	0	4	2	2	2.0	-	15.4
#DIV	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
BUFF	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
COME	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
#RAP	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
BAEA	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
RUGR	0	0	0	0	0	1	1	0	1	0	1	0	0	4	1	1	1.0	-	30.8
#SHO	0	0	0	0	0	0	3	0	0	0	0	0	0	3	3	3	3.0	-	7.7
GRYE	0	0	0	0	0	0	3	0	0	0	0	0	0	3	3	3	3.0	-	7.7
BTPI	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	7.7
HUMM	0	0	0	0	0	0	5	0	0	4	0	0	2	11	5	2	3.7	1.5	23.1
RUHU	0	0	0	0	2	2	0	2	2	0	0	1	1	10	2	1	1.7	0.5	46.2
BEKI	0	0	0	0	0	0	0	0	1	0	0	0	2	3	2	1	1.5	0.7	15.4
#WOO	0	0	0	0	1	0	0	2	1	1	0	0	2	7	2	1	1.4	0.5	38.5
WOPE	0	0	0	0	0	0	0	0	1	0	0	0	1	2	1	1	1.0	-	15.4
NOFL	0	0	0	0	0	0	0	1	0	1	0	0	1	3	1	1	1.0	-	23.1
PIWO	0	0	0	0	1	0	0	1	0	0	0	0	0	2	1	1	1.0	-	15.4

Fanny Bay - Little Bay Wetlands Bird Surveys of Forest Habitat for Spring 1991 (continued)

Date	04Mar	10Mar	17Mar	25Mar	01Apr	07Apr	14Apr	21Apr	29Apr	05May	12May	19May	27May	Total	Max	Min	Mean	SD	%Freq
#PAS	10	26	41	25	28	53	38	45	27	37	21	26	26	403	53	10	31.0	11.3	100.0
FLYC	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	7.7
HAFL	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	7.7
PSFL	0	0	0	0	0	0	0	0	0	1	1	1	1	4	1	1	1.0	-	30.8
VGSW	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	2.0	-	7.7
STJA	0	0	1	0	1	3	0	0	0	0	0	0	0	5	3	1	1.7	1.2	23.1
NOCR	0	12	0	20	1	4	0	0	0	0	0	0	0	37	20	1	9.3	8.5	30.8
CBCH	0	0	4	0	5	2	6	2	7	2	0	2	0	30	7	2	3.8	2.1	61.5
BUSH	0	0	2	2	0	0	0	0	0	0	0	2	0	6	2	2	2.0	-	23.1
RBNU	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
BEWR	0	0	1	0	0	1	0	0	0	2	0	1	2	7	2	1	1.4	0.5	38.5
WIWR	0	0	0	0	0	0	0	0	0	1	1	0	0	2	1	1	1.0	-	15.4
MAWR	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	-	7.7
GCKI	0	6	0	0	0	4	7	0	0	0	2	0	0	19	7	2	4.8	2.2	30.8
RCKI	0	0	0	0	0	9	0	0	1	0	0	0	0	10	9	1	5.0	5.7	15.4
SWTH	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	7.7
AMRO	3	2	8	1	14	10	12	15	6	6	2	2	4	85	15	1	6.5	4.9	100.0
VATH	2	2	4	0	0	4	0	0	0	0	0	0	0	12	4	2	3.0	1.2	30.8
BOWA	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	-	7.7
SOVI	0	0	0	0	0	0	0	0	0	1	1	2	0	4	2	1	1.3	0.6	23.1
HUVI	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	-	7.7
WAVI	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	7.7
WARB	0	0	0	0	0	0	0	1	0	3	0	0	1	5	3	1	1.7	1.2	23.1
OCWA	0	0	0	0	0	1	1	7	3	7	3	2	3	27	7	1	3.4	2.4	61.5
YEWA	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	-	7.7
YRWA	0	0	0	0	0	0	0	1	0	1	0	0	0	2	1	1	1.0	-	15.4
BTGW	0	0	0	0	0	0	0	1	3	3	2	3	1	13	3	1	2.2	1.0	46.2
TOWA	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	-	7.7
MGWA	0	0	0	0	0	0	0	0	0	1	1	1	1	4	1	1	1.0	-	30.8
WIWA	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	-	7.7
RSTO	0	0	1	0	0	5	0	3	0	0	1	0	2	12	5	1	2.4	1.7	38.5
SOSP	2	2	4	2	1	5	0	3	2	2	1	4	1	29	5	1	2.4	1.3	92.3
GCSP	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	-	7.7
DEJU	0	0	14	0	0	0	0	0	0	0	0	0	0	14	14	14	14.0	-	7.7
RWBL	1	1	2	0	0	0	0	0	0	0	0	0	0	4	2	1	1.3	0.6	23.1
BHCO	0	0	0	0	0	0	0	0	0	0	1	1	1	3	1	1	1.0	-	23.1
PUFI	1	1	0	0	4	1	7	0	0	1	1	2	2	20	7	1	2.2	2.0	69.2
RECR	0	0	0	0	0	0	1	2	0	0	0	0	0	3	2	1	1.5	0.7	15.4
PISI	0	0	0	0	2	0	4	9	0	0	0	0	1	16	9	1	4.0	3.6	30.8
AMGO	0	0	0	0	0	0	0	0	2	1	2	1	2	8	2	1	1.6	0.5	38.5
EVGR	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4	4	4.0	-	7.7
#TOT	10	30	41	25	31	56	47	50	33	44	22	27	33	449	56	10	34.5	12.7	100.0

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Date	02Jun	09Jun	17Jun	24Jun	22Jul	28Jul	04Aug	19Aug	25Aug	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	11.1
GBHE	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	11.1
#RAP	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	11.1
OSPR	0	0	1	0	0	0	0	0	0	1	1	1	1.0	-	11.1
RNPH	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
RUGR	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
BTPI	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
HUMM	2	0	0	0	0	0	0	0	0	2	2	2	2.0	-	11.1
RUHU	1	4	2	2	0	0	0	0	0	9	4	1	2.3	1.3	44.4
BEKI	0	0	0	0	0	3	0	1	0	4	3	1	2.0	1.4	22.2
#WOO	0	2	1	0	0	1	0	0	1	5	2	1	1.3	0.5	44.4
WOPE	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
HAWO	0	0	0	0	0	0	0	0	1	1	1	1	1.0	-	11.1
NOFL	0	1	1	0	0	1	0	0	0	3	1	1	1.0	-	33.3
#PAS	29	29	41	25	15	10	37	0	9	195	41	9	24.4	12.0	88.9
FLYC	0	0	0	0	1	0	1	0	0	2	1	1	1.0	-	22.2
WIFL	0	1	0	2	0	0	0	0	0	3	2	1	1.5	0.7	22.2
HAFL	1	1	0	0	0	0	0	0	0	2	1	1	1.0	-	22.2
PSFL	0	2	1	0	0	0	0	0	0	3	2	1	1.5	0.7	22.2
VGSW	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
CBCH	3	3	4	1	3	0	6	0	0	20	6	1	3.3	1.6	66.7
BUSH	0	0	8	0	0	0	9	0	8	25	9	8	8.3	0.6	33.3
BRCR	0	0	0	0	0	0	1	0	0	1	1	1	1.0	-	11.1
BEWR	0	1	2	1	0	0	0	0	0	4	2	1	1.3	0.6	33.3
WIWR	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1
SWTH	2	5	8	3	2	0	0	0	0	20	8	2	4.0	2.5	55.6
AMRO	3	2	4	4	6	3	6	0	1	29	6	1	3.6	1.8	88.9
CEWA	0	0	0	0	0	0	3	0	0	3	3	3	3.0	-	11.1
SOVI	0	1	1	0	0	0	0	0	0	2	1	1	1.0	-	22.2
WAVI	0	2	2	2	0	0	0	0	0	6	2	2	2.0	-	33.3
REVI	0	0	1	1	0	0	0	0	0	2	1	1	1.0	-	22.2
WARB	0	0	0	0	0	0	3	0	0	3	3	3	3.0	-	11.1
OCWA	4	0	2	4	0	0	0	0	0	10	4	2	3.3	1.2	33.3
YEWA	2	3	1	1	0	0	0	0	0	7	3	1	1.8	1.0	44.4
MAWA	0	1	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
BTGW	0	0	0	1	0	0	0	0	0	1	1	1	1.0	-	11.1
MGWA	1	0	0	0	0	0	0	0	0	1	1	1	1.0	-	11.1
RSTO	2	2	1	1	1	0	1	0	0	8	2	1	1.3	0.5	66.7
SOSP	2	1	3	1	2	2	1	0	0	12	3	1	1.7	0.8	77.8
BHCO	1	1	1	1	0	0	0	0	0	4	1	1	1.0	-	44.4
PUFI	1	1	2	0	0	3	0	0	0	7	3	1	1.8	1.0	44.4
PISI	2	0	0	0	0	0	0	0	0	2	2	2	2.0	-	11.1
AMGO	4	2	0	1	0	2	6	0	0	15	6	1	3.0	2.0	55.6
#TOT	35	35	46	27	15	14	37	1	10	220	46	1	24.4	15.0	100.0